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Veterinary Service in the Army and the Duties of Veterinarians During the War Period

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THE veterinary service of our army for many years was never organized. It consisted largely of civilian veterinarians employed by the Quartermaster Corps under contract. In 1900, the veterinarians attached to regiments of cavalry and field artillery were given the pay and allowances of second lieutenants, without privilege of promotion or retirement, and the Quartermaster Corps still continued to employ a considerable number of civilians for duty at corrals and depots. No enlisted men were provided and the professional standard of veterinarians in many cases was low, with neither opportunity nor encouragement for improvement.

The American Veterinary Medical Association and members of the profession had made persistent efforts in congress to secure adequate legislation for the army veterinary service, but without encouragement or success. Even the lessons of the Spanish War, which taught the need of an organized service, were soon forgotten, and it was not until June 3, 1916, that congress passed an act giving veterinarians commissioned rank up to and including that of major and providing for the establishment of a veterinary corps in the medical department of the army.

When the present war broke out there were only 58 veterinary officers in the army, and they were assigned to mounted regiments. There was no enlisted personnel and no definite plan of organization. The Secretary of War decided that the Overman Act of May 18, 1917, furnished authority for the necessary organization during the present war. Major General Gorgas, surgeon general of the army, immediately took steps to place the corps under proper organization and on an efficient basis of expansion. A number of the army veterinary officers and civilian veterinarians were called to Washington to devise a plan of procedure. The matter was referred to the general staff, and after an extended study a general order of the War Department, No. 130, dated October 4, 1917, was issued, and on this order was based the present organization. Authority was granted for one veterinary officer and sixteen enlisted men for each 400 public animals, thus placing the corps on a percentage basis. Special regulations No. 70, for the government of the army veterinary service, and a guide for the use of veterinary officers, were written in the surgeon general's office. After some delay, on December 15, 1917, the regulations were made a special order by the Secretary of War.

Lieutenant Colonel J. J. Aitken, of the British army veterinary service, arrived in November, 1917, and remained in the office of the surgeon general for five months. He was sent as a repre-

sentative of the British veterinary service and as an advisor in order that we might secure the benefit of the experience of the British service and his personal training. His services were of inestimable value in perfecting the details of the organization. A set of blank forms was devised for routine reports and returns. A number of official and educational circulars have been issued to veterinary officers, instructing them in the performance of their official duties and in the treatment, control, and eradication under service conditions of glanders, influenza, skin diseases, etc.

The functions of the veterinary corps are to prevent inefficency in public animals, to render professional treatment to the sick and injured, to organize and operate veterinary hospitals, to evacuate sick and wounded animals from the firing line to the hospitals in the rear, to furnish veterinary supplies, to inspect meat and dairy products, to make recommendations on matters pertaining to sanitation and the control of preventable diseases among public animals, and to furnish and instruct personnel, both commissioned and enlisted, for carrying out these operations.

For the performance of these duties the corps now consists of one lieutenant colonel, 47 majors, 96 captains, 395 first lieutenants, and 966 second lieutenants, a total of 1,505 commissioned officers and 9,000 enlisted men. The authorized strength is 18,000 officers and men. In order to receive a commission a veterinarian must be a graduate of a reputable veterinary college and must pass an examination in veterinary subjects as well as the physical examination required of all commissioned second lieutenants in the reserve corps. These veterinarians are left in civil life until their services are required, when they are called to active duty. This list became so large that it has been necessary to suspend examinations of civilians temporarily. Veterinary graduates who have been enlisted as privates or in the medical reserve corps are given a chance to take the examination for commissions, and if qualified are assigned to duty as officers when a vacancy occurs. The standard of men being commissioned is improving.

Each Division Has Veterinary Personnel

Every division of troops before going overseas has a complete veterinary personnel of 12 officers and 51 enlisted men, organized, equipped, and supplied before sailing. Thus far 44 completed divisional organizations have been formed in this country. The division veterinarian, who is responsible for this service, is attached to the staff of the commanding general. He has as assistant a veterinary officer trained in meat inspection for the examination of all meat and dairy products used by the troops. Attached to each division is a mobile veterinary section consisting of 21 men equipped and trained for the removal of inefficient animals from the divisional units to hospitals. These mounted men will have stations near the front where sick and injured animals will be collected, given the necessary first-aid treatment, and then removed to the hospitals on lines of communication. This service is of vital importance in preventing unnecessary suffering, conserving animals and sustaining the efficiency of the fighting units.

At each auxiliary remount depot, operated by the Quartermaster Corps, are maintained six veterinary officers and seventy-five enlisted men. A remount depot is placed at each division camp, for the assembling of animals after purchase and where they are kept until ready for issue to troops. Sick animals from the division camp and from the auxiliary remount depot are cared for in the veterinary hospital at the depot which is organized and administered by the veterinary detachment. The veterinarian is also responsible for making proper recommendations for the improvement of the sanitary conditions surrounding the animals. A similar service is maintained at the animal embarkation depots.

Weekly telegraphic reports are received from division veterinarians and the veterinarians of auxiliary remount depots relative to the number of noneffective animals, the presence of communicable diseases, and the death rate. This report was instituted in December, 1917, and the veterinary corps takes pride

in showing the improved condition and increased efficiency which are apparent from the following figures:

	Dec. 15, 1917	June 1, 1918
Total non-effective	20,513	12,323
Percentage non-effective	9.05	4.56
Deaths	961	194
Percentage of deaths	.44	.071
Total number of animals	213,803	269,779

The total number non-effective includes hospital cases and those in convalescent corrals.

Veterinary service is also supplied to all regiments of cavalry, artillery, and all other mounted troops scattered throughout the country and to military posts having sufficient animals to warrant same.

Fifty veterinary officers and an equivalent number of enlisted men are on duty with the subsistence division of the quartermaster's department. This division buys all meats and meat food products issued to the army by the quartermaster's department, both in this country and abroad, and the entire inspection is being handled by veterinary officers. This consists not only of the selection, inspection, covering, storage, and shipping of refrigerated beef, but also the selection of material and following it through the entire processes of canning, smoking and curing as regards canned meats, bacon and ham. This is one of the most important duties of the veterinary corps, and an enormous amount of work has been efficiently handled to date and without complaint. Veterinary officers are also sent to Chicago for training as meat inspectors for each division and camp as required.

An army veterinary laboratory has been established at Philadelphia, Pa., and is doing important work in investigating animal diseases encountered in the service and in trying out various lines of treatment. An army officer trained in this work has also been sent to each of the department laboratories in the United States for the purpose of making blood tests for glanders, dourine, and other diseases, and for general veterinary laboratory work.

At the ports of embarkation a veterinary officer is in charge of sanitation of the transports used in shipping animals abroad. A transport veterinarian is also provided for each boat, who is practically in charge of the shipment.

Five general veterinary inspectors are assigned to different zones in the United States. Their duties are to inspect the division camps and auxiliary remount depots, instruct the veterinary personnel, and improve the local veterinary conditions wherever possible. They also inspect the rest and feeding stations in stockyards of the railroads, and stables which may be used in the transportation and purchase of public animals, and direct the sanitation, cleaning, and disinfection of same. These inspectors work under direct orders from the surgeon general's office and are free from the control of local commanders and quartermasters.

Veterinarians are on duty with the purchasing boards maintained by the quartermaster corps, and no animals are bought unless passed on and given the mallein test for glanders by these officers. They also supervise the sanitation, cleaning, and disinfection of stables and stockyards which are or may be used for the collection and transportation of public animals or animals intended for presentation to purchasing boards. They are thus not only reducing the animal inefficiency in the army but are advancing the live stock interests of the country at large.

Since the outbreak of the war, the supply branch of the surgeon general's office has labored with the selection, standardizing, furnishing, and shipping of all veterinary supplies used by the army. These comprise medicines, dressings, bandages, instruments, hospital equipment, animal ambulances, and a multitude of articles required for the modern treatment of sick animals. The equipment and supplies prior to October were very meager and this work has had to be begun at the bottom. The capacity of the manufacturers of this country has been strained to the limit in supplying many of these articles, but the supply system has now advanced to a point where all requirements are being fully and promptly met.

Excellent Training Facilities Afforded

For the overseas service there are to be provided, in addition to the veterinary

service attached to each division, veterinary hospitals on the line of communications and mobile hospitals attached to the army corps for removing the sick and wounded animals. Some have gone and some are in training. The others will be formed as rapidly as possible. A veterinary training school has been organized at Camp Lee, Virginia, for the express purpose of receiving green men and training, equipping, and instructing them and organizing them into these units. This school has a faculty of line officers for military instructors and veterinarians for professional instruction, and aggregates about 1,800 officers and men at present. A modern veterinary hospital in which the men can be trained to assist veterinary officers in practical work has been approved from plans prepared in the surgeon general's office and will, it is hoped, shortly be erected as an essential feature of this training school.

Other training facilities now afforded are in the veterinary section of the medical officers' training camp at Camp Greenleaf, Georgia, and Fort Riley, Kansas. At Camp Greenleaf, veterinary officers are given a two months' course in the duties of officers of the army. A class of seventy-five graduated in June. In the future it is expected to graduate a class of one hundred, monthly. There are also about 250 veterinary enlisted men under training in this camp and about 350 receiving instruction at Fort Riley. The latter place is especially desirable, since suitable men can be given a course in the school of horseshoeing, cooking, and baking, after which they are assigned to the organizations for overseas service. Every auxiliary remount depot maintains a horseshoeing school in which a veterinary officer is the instructor. A veterinary officer who is an expert horseshoer and organizer is going to the different camps as needed and putting these schools on a better basis.

These observations indicate the activities of the veterinary corps today. It has a compact and comprehensive organization, capable of expansion as required, a personnel which is steadily increasing in character and efficiency and is rapidly rounding into an efficient unit.

Strenuous Times Require Strenuous Effort

The strenuous times now before our country require the accomplishment of many things, which in peaceful days would not be required. Carelessness in our every-day work might be overlooked in less important periods, but today, and perhaps for many days, we must exert all the forces which have hitherto been latent within us; we must give every possible minute of our time, our thoughts, and our energy, to the end that the agricultural industry of the country may be better served and strengthened and to the greater and consequent end that the country will be materially assisted in winning the war with the least possible expenditure of lives and time. This is no time to think of self. There are many and great things to be done and every one must do all that lies within his power.

As veterinarians you are the rear guard for the food supply of those who are taking upon themselves the blows of an enemy.

Having wide acquaintance and making visits to sections perhaps far apart, you are in a position to do a vast amount of educational work in overcoming pessimism, sloth, and unwise propaganda. You are in a position to encourage and further stimulate the patriotic efforts of the nation's feeders to build up an inexhaustible supply of food. We should keep in mind that each of us is endowed with the power to think, and we should concentrate that power on thoughts that may be of benefit to the nation of which we are but atoms, yet capable, when welded together, of immense power.

As veterinarians your duty is plain and, if carried out, will result in benefits accruing not only to your government but to yourself. Two items of primary importance lie before you, i. e., the production and conservation of meat and milk producing animals.

The various contagious and infectious diseases of live stock are a constant menace, and cause annually losses that are sufficient to feed our entire population. Many of these diseases are pre-

ventable by sanitation or vaccination. our duty in all cases of contagious and infectious diseases lies in putting into use every measure known to science. If preventive treatment exists in the nature of serum or vaccines, it should be immediately applied, given unstintingly and with care. Reports of the existence of contagious diseases must be made known to those charged with their eradication and control, that repressive measures to prevent their spread may be instituted.

To permit a contagious disease to go unchecked is a crime against the nation. To neglect reporting to the authorities its presence so that its spread may be checked is criminal.

Some of the contagious and infectious diseases are spread by the passage of animals through stockyards, and of the number disseminated in this way, shipping fever of horses, hemorrhagic septicemia, and hog cholera are the most important. These diseases can be prevented to a great extent by the use of serums and adequate sanitation. Veterinarians should warn shippers of the danger of infection during transit through stockyards. If no state regulations are in force which require the cleaning and disinfection of stock cars and stockyards, your association can perform a patriotic duty by petitioning the legislature, as a body, that such needed laws and regulations should be promulgated and enforced. Veterinarians should report to the proper authorities outbreaks of shipping fever in centers where horses or mules are presented to army purchasing boards. We realize full well that traffic in live stock must continue, but we can see that it is safeguarded against disease.

In sections where black leg prevails, induce your client to vaccinate their young animals. If it is suggested that the advice comes from selfish motives vaccinate free of charge and try to establish in the minds of owners that you are working for their interests.

Advise against the sale of immature animals. Point out to the owners that by a little extra time and effort, sufficient fodder can be obtained to finish the profitable growth of the animal. Impress upon them that young animals grow into money. Far better to dispose of one old animal which has outlived its value and which depreciates yearly than to dispose of one that increases in value with its growth.

Sanitation is becoming more and more important with our knowledge of disease. Thousands of young pigs are lost every year from necrobacillosis. There are three forms of this disease in swine: necrotic stomatitis, snuffles, and necrotic enteritis. The loss in flesh of beef cattle and the loss in milk from dairy cattle affected with foot rot, are large items. The loss of lambs from foot rot is extensive. All these conditions are due to the necrotic organism and may be prevented by sanitation.

Advocate disinfection. It devolves upon you to give demonstrations in the method of disinfection. It may take time, but keep in mind that thousands of people are giving time, money, and life freely in the present struggle.

The reward for good and patriotic work will come in the knowledge and consciousness of well doing.

When peace again rules the world, the devastated countries must come to the United States for seed stock.

Encourage and stimulate your clients to maintain and increase their herds and flocks. The future for the live stock industry of the United States is bright. We can well afford to be optimistic.

Belgium may come to America for breeding horses when that country again comes into its own. Holland, vastly depleted of cattle, may purchase Fresians in this country. The demand for meats by the now warring nations will increase until such time as those countries can be restocked and become self-providing. Hence you may do your people and the allies a great service by being prepared for such an emergency. It will be many years before the supply will keep up with the demand. In conclusion, be optimistic above all things; the mental attitude of a man affects every one with whom he comes in contact. An optimist admits there is more or less trouble in the world, but he faces it without fear and this attitude is infectious.

An American soldier in France is said

to have penned the following appeal to the people of this country: "In this renaissance of our country's valor, we, who will edge the wedge of her assaults, make calm acceptance of its hazards. For us, the steel-swept trench, the stiffening cold, weariness, hardship, worse. For you whom we go, millions safe at home, what for you? We shall need food. We shall need care. We shall need clothes for our bodies and weapons for our hands. FROM YOU, who are our resources and reliance, who are the heart and hope of that humanity for which we smite and strive, must come these things."

Anthrax and Its Control*

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IF YOUR program committee had taken the trouble to comb, with the proverbial fine-tooth comb, the entire calendar of bacterial diseases, I do not believe it could have selected one, with the possible exception of tuberculosis, whose control has occasioned more serious thought to sanitarians and governmental authorities, the world over, than that of anthrax; for not only does this disease affect the lower creatures, with which the veterinarian has to deal, and the human family, whose health and welfare are in the hands of the human medical profession, but it is also a serious menace to trade, affecting, as it does, business enterprises of various kinds.

Looked at from this broader aspect, therefore, it may readily be inferred what a boon to humanity, generally, the effective control of anthrax infection would be; but it also suggests innumerable difficulties that stand in the way of its absolute accomplishment.

One seldom picks up a professional medical journal, or a departmental report, either domestic or foreign, without seeing mention made of cases, or outbreaks, of anthrax as affecting both people and animals, although all civilized countries have, or are presumed to have, efficient laws to prevent the introduction of the infection, through infected materials, from other countries, and for a similar purpose within their own borders. And yet the bacterium anthracis seems to continue to get in its deadly work.

So far as anthrax in the human being is concerned, it may be looked upon as an industrial, vocational, or occupational disease, affecting chiefly cattle men, horse men, shepherds, farmers, butchers, veterinarians, laboratory workers, and workers in hides, wool, hair, bristles, bones, rags, glue, and leather.

Records of cases are too numerous to mention, but as a matter of interest, and to show the insidiousness of the infection, I may be permitted to cite, briefly, an outbreak which occurred last year among tannery workers in the state of Massachusetts, the Health Department reports of which I happen to have in my possession.

Twenty-five cases were reported to the State Department of Health in four months, constituting the severest outbreak of anthrax in the human ever recorded in the state of Massachusetts.

While twenty-three of the twenty-five reported cases occurred in persons handling hides, the most interesting group consisted of twenty cases which were infected from a common source. An analysis of the early reports showed that the infection seemed to be confined to the workers in three tanneries located in adjoining towns; and further study revealed the fact that every one of the persons infected had been handling dried "China" hides.

It seemed hopeless to try to find a common source of infection affecting three rival tanneries. However, the key to the situation was discovered in the characteristic trade mark stamped on the hides. While all three of the tanneries received hides through Boston and New York brokers, the brokers in turn pur-

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chased them through a common agency in New York City. By means of this particular trade mark, the special lot of hides involved was traced through Boston and New York brokers to a single cargo of hides which entered the United States at the port of New York from Hankau, China. In that portion of China in which these hides originated, anthrax is known to be epizootic. From this cargo of hides each one of the tanneries involved received a shipment. Further, the shipping receipts showed that they arrived before the first case of anthrax occurred.

The next step was to demonstrate the exposure of the infected men to these hides. A comparison of the time when the hides were in the process of being tanned with the working time of the infected men furnished the test. Every one of the infected men had handled hides bearing the characteristic trade mark. This completed the picture. Hides coming from infected territory in faraway China; shipped to the tanneries involved; handled by men who came down with anthrax; and with no cases in other tanneries, was sufficient evidence on which to convict that shipment of hides of being the cause of that particular outbreak.

This Massachusetts report, of which I have given merely the gist, with reference to the introduction of the infection, does not mention any after-effects in animals, through the infected tannery refuse gaining access to running water and being carried down stream to spread infection to pastures or meadows along its course, which is quite possible. In fact, instances of outbreaks in live stock, brought about in this way, have been recorded.

Here, then, we have a case of anthrax infection originating in China, brought to this country through articles of commerce, causing a severe outbreak in human beings, and with the further possibility of the infection being spread to live stock through infected streams overflowing grazing areas along their courses, and creating fresh foci of infection in our own country.

Of course, the Federal government has very strict regulations to prevent the introduction of anthrax infection from foreign countries where the disease is known to be endemic or enzootic; but in spite of the stringency of the regulations, we see that it still may be possible for the infection to "run the blockade" successfully, and gain access to our shores from outside sources. Or, in other words, perfect control, so far at least as infected hides are concerned, does not as yet seem to have been accomplished.

Difficulty of Control

It is not my intention to devote any time to the disease anthrax as an academic subject, as I take it that all of us are more or less familiar with it, it being one of the oldest diseases known to medical science, but rather to discuss the question of control, which is the more important and practical phase, from an economic point of view, although vastly more difficult of solution than the ordinary individual has the remotest conception of.

In a small country like Great Britain, which is dependent upon the outside world for the greater part of its raw materials, the seriousness of anthrax is considered more perhaps from the standpoint of trade than of animal production; and there, outbreaks of the disease in animals are dependent largely upon its introduction through trade channels. In short, while that country may have its scattered areas of more or less permanent infection, the disease is not looked upon as indigenous, but rather as exotic, being brought in in such commercial articles as wool, hides, hair, feedings stuffs, etc., from countries where the disease exists in enzootic form.

Fortunately for all, their sanitary laws are extremely rigid with regard to anthrax; and what is of even greater importance, their laws are strictly enforced—a very weak point with us—so that outbreaks are more easily controlled, and the infection prevented from spreading, through strict sanitary procedure, which is under the supervision of governmental authority solely. And yet, even with such efforts at strict sanitary

control, that country has its annual outbreaks of anthrax. True, they are not so extensive in area, nor does a single outbreak comprise anything like so many animals as with us; but it goes to show the difficulty in controlling this infection, under the strictest sanitary methods, within the country, even when fortified by state laws and governmental regulations.

Let us compare the conditions mentioned, which may also apply to other European countries, with those existing in our section of this country, and see if we can discover any reason, or reasons, why anthrax infection is not only not being satisfactorily controlled, but seems to be increasing from year to year.

True, most of our infected states have state laws and regulations which are presumed to be executed by state live-stock sanitary boards or commissions created for the special purpose. And I believe these laws would be just as efficient as those of any other country, provided they were enforced. Unfortunately, however, some of our states, at least, have so many laws on their statute books, that many of them are lost sight of even by the legal profession. In consequence, they are not enforced; resulting in our good people losing due respect for laws, and worthy measures frequently being rendered nugatory; live-stock sanitary legislation being no exception to the rule.

When an outbreak of a dangerous infectious or contagious disease occurs among people, the matter is taken out of the hands of the laity entirely, and is placed, where it belongs, in those of the state health authorities until it is controlled and eradicated. And so it should be with this class of diseases in animals, some of which like anthrax, are communicable to human beings; they should be given over at once to the state veterinary authorities, or health of animals department, if you will, and the laity should not be permitted to have anything to do with them, in an independent way, but be required to report their existence, or a suspicion thereof, to the proper authorities for their immediate action. In fact, I should like to go even further and to say that, when dealing with these dangerous deadly diseases, the layman ought not to have an opinion in the matter. Of course we are living in a free country, where freedom of speech is a privilege, but freedom of opinion, and especially of expression, on the part of the uninformed, is an extremely serious matter in connection with this class of disease, and often results in large losses in live stock; in danger to human beings; and in the spread of infection.

I have briefly hinted at what ought, and what ought not, to be done, so far as the live stock sanitary authorities and the laity are concerned, in an attempt to control such a dangerous infection as that of anthrax.

Owner's Neglect Responsible for Spread

What are the conditions, however, that one very often finds? An owner goes out in the morning during the warm season of the year and finds one or more of his animals dead in pasture, the victim or victims, probably, of internal anthrax in acute form.

There may be no external manifestations, and he decides at once that the disease must be something other than anthrax because, like too many of our stockowners, he has the erroneous impression that this disease is manifested only by external swellings; and if such evidences are not to be seen, then the animals must have succumbed to some mysterious ailment with which he is not familiar.

While, in reality, if he only knew it, he may be dealing with the disease in its most virulent form, and with carcasses whose blood is simply seething with anthrax organisms.

However, the carcass is permitted to remain on the surface of the ground, with no attempt made at sanitary disposal. No report of the case is made to the authorities, although the law may tell him that it is his duty to report all cases of sudden death, especially during summer, and when the cause cannot be accurately determined. But he has no special respect for the law, nor does he have any particular fear of the conse-

quences of evading it, because experience teaches him that its requirements are seldom, or never, enforced; and why, therefore, should he go to the trouble, and perhaps some expense, to carry out the provisions of a law that might as well not be on the statute books. He feels that he has already lost enough by the death of his animal; and he loses all further interest in what remains of it, viz., the carcass. Or, to make matters worse, in order to save a few dollars from the "wreck," he may skin the cadaver; become inoculated himself; spread infection through the infected hide in transit to some remote locality; or like the Chinese hides previously alluded to, to tannery workers in the tanning districts in different sections of the country.

He leaves the infected carcass with or without the hide, for infection to be spread from it through the medium of numerous carriers, both living and inert; because any agent which has come in contact with anthrax blood, and is capable of moving, or being moved, from one place to another, is capable of spreading anthrax infection.

Our friend the owner imagined, no doubt, that his troubles were at an end with the death of his animal; but he failed to realize that by neglect to carefully dispose of the diseased carcass, he was not only perpetuating infection on his own place to create greater losses later on, but his neglect would probably be the means of spreading infection to his neighbors, or to wherever it was capable of being carried through the medium of the numerous agencies alluded to. Through ignorance, or misinformation, he failed to grasp the fact that his dead animal was infinitely more dangerous, as a source for the spread of infection, than when alive.

What a terrible toll in animal life has just such ignorance been responsible for. In fact, in my humble judgment, ignorance of the true nature of this disease has been, and will continue to be, so long as it is permitted to exist, the greatest barrier the sanitarian has to contend with in the more successful control of anthrax in our Gulf states.

A fact too often lost sight of, I am afraid, is that the infection of anthrax must be controlled, mainly, by sanitary science, rather than by therapeutics, although the more recent advances made in biologics afford most valuable aids. Consequently, we will never, in my humble opinion, be able to control the spread of this infection until strict sanitary legislation is enacted, where it does not already exist, and its requirements most rigidly enforced. I make this statement because of the almost endless variety of carriers of the virus, which the lack of sanitation provides.

For a number of years we had been suspicious of some of these carriers, and a year or two ago the Louisiana Experiment Station began some tests to verify, if possible, these suspicions. The results have already been published in bulletin form, but as the subject is of such vital import to the live-stock interests of our section of the country, I may be permitted to review them in brief in order to emphasize their importance in connection with our topic.

The tests were conducted by Dr. Harry Morris, bacteriologist and assistant veterinarian of the station, and the suspected carriers used included the buzzard, the dog, the hog, the cat, the opossum, and the chicken.

Without troubling you with details of the different experiments, I will simply quote the summary given by Dr. Morris:

1. Anthrax was not found in the feces of the buzzard after eating anthrax spores.
2. Anthrax was obtained from the feet and beaks of buzzards, kept in a cage, forty-eight hours after feeding upon an anthrax carcass.
3. Anthrax was obtained from the vomitus of a buzzard two hours after eating anthrax flesh.
4. Anthrax spores were not destroyed in the digestive tract of the dog. They were found in the feces six days after anthrax had been fed.
5. The feces of the hog contained anthrax for a period of five days after eating the spores.
6. Anthrax was found in the feces of the cat for a period of four days after eating anthrax spores.
7. Anthrax was not destroyed in the digestive tract of the opossum.
8. Spores were not destroyed in the digestive canal of the chicken, the feces con-

taining anthrax for forty-eight hours after the spores were fed.

Here, then, we have experimental evidence, at least, that the buzzard, after feeding upon an anthrax carcass, is capable, through its contaminated beak and feet, of spreading infection; and also through its vomitus, of creating fresh foci of the disease at some considerable distance, no doubt, from the original source, viz., the exposed charbonous carcass.

Also, that dogs, hogs, cats, opossums and chickens, may, after feeding upon anthrax material, carry and spread infection through the medium of their infected feces, more particularly if obtained in the spore stage; and no doubt, through their feet, which are more than likely to have become contaminated at the time of feeding.

Blood-Sucking Flies As Carriers

But further, we have always had grave suspicion that blood-sucking flies of difsome kinds must be responsible, in some measure at least, for the speed with which outbreaks of anthrax occurred, especially in the carbuncular form, over considerable territory, during the summer time, or what might be termed the "fly season." In fact as far back as 1896, in a report submitted on an extensive outbreak of anthrax occurring in several contiguous parishes in Louisiana, we made the following statement:

"After the disease became existent, there can be no doubt, whatever, that the chief factors in its extensive spread, were flies of different kinds, but mainly the blood-sucking varieties, and notably a small grey horse-fly, *Tabanus lineola*, which were present in such appalling numbers during the summer months as to constitute a veritable plague. **The fly,** however, is not, as a great many of our people imagine, the direct cause of charbon, but an indirect one, by acting the part of a transmitter, when, after sucking the blood, containing the germs, of an animal affected with the disease, it alights on a healthy one, for a similar purpose, and inoculates it with its soiled proboscis."

Our suspicion at that time was not followed up by actual tests to verify it: but since then, work has been carried on along this line at the Louisiana station, and since published in Bulletin No. 163, with results that seem to prove our contention of twenty odd years ago.

As in the previous set of experiments, Dr. Morris conducted those with blood-sucking insects, the purpose being to test the possibility of the transmission of infection from diseased to healthy animals by them.

The insects used in the experiments were the horn-fly, one of the tabanids, or horse-flies, and two varieties of mosquitoes; the experimental animals being guinea-pigs and sheep—the work being conducted under as nearly natural conditions as possible, pure cultures of anthrax spores being used in producing the disease. Included in the technic were cages with fine wire screen tops, similar to one described by Dr. Francis, a few years ago, in the *Journal of Infectious Diseases;* and also small glass jars with tops of similar material, which were used in the work with the horse-fly and the mosquitoes.

All of the guinea pigs were posted and bacteriological examinations made of blood from the spleen; and any doubtful cases were cultured and animal inoculations made to verify results.

It is unnecessary to enter fully into the details of the technic of these experiments. Suffice it to say that both the horn-fly and the horse-fly were found capable of transmitting anthrax infection to healthy animals after feeding upon the blood of one infected with the disease; and that the mosquitoes used were able to communicate the infection in a similar manner to that of the flies.

Additional work of considerable interest was conducted in connection with the foregoing experiments, viz., that of fecal contamination in the case of the insects that had been feeding on anthrax blood.

Tests were first made to determine the presence of anthrax bacilli in the blood of the infected host before permitting the experimental insects to feed.

The fecal deposits from the inside of the containers in which the insects were placed, were cultured by removal to agar dilution plates, and incubated for twenty-four hours at 37.5° C. The cultures were then examined, and all colonies resembling anthrax were re-

cultured and inoculations made into guinea pigs with the following results:

Of 1,218 "specks" from the horn-fly that were cultured, eleven produced colonies of anthrax. These colonies were found within six hours after the insects had fed upon the infected host. Two colonies were found in 318 "specks" from the horse-fly, and one colony, out of 711 deposits examined, from the mosquito.

These results would suggest that bacilli, or the vegetative form of the organism, which would be the form ingested by the insect in sucking the blood of the living animal, are very largely destroyed in the digestive tract. However, under certain conditions, it may be possible, in fact I think probable, for the insects to obtain the organism in the spore form. in which case their deposits would contain more or less of them, and be that much more dangerous as a means of spreading infection.

During the experiments with animals, previously alluded to, some work was conducted with surface-sucking flies, such as the common house-fly, and "green bottle," or "blow," flies, to determine whether anthrax might be passed in their excrement after feeding upon anthrax material.

Tests were made both in the laboratory, with the house-fly; and in the field, in the case of the others.

A house-fly was confined in a large glass bottle and allowed to eat from a mass of anthrax spores. When the deposits from this fly were removed from the sides of the bottle, and agar dilution plates made from them, and incubated at 37.5° C., in some cases almost pure cultures of anthrax were obtained.

In another instance, four of the "green bottle" flies were collected from a cow that had recently succumbed to anthrax. Five hours later, 15 "specks" were cultured, as in the previous case, and three of the deposits developed colonies of anthrax.

Other similar experiments were tried, with the result that quite a percentage of the fecal deposits showed the presence of anthrax.

Besides this method of fly-transmission by fecal contamination, it has been abundantly demonstrated that these insects are capable of carrying virulent material on their bodies and feet, after feeding upon infected blood and other tissues.

But what, you may ask, is the significance of all this detail, and what bearing has it upon my topic?

The chief purpose I had in view was to emphasize, and try, if possible, to force home two main points, viz., (1) The almost endless variety of agencies and channels through which anthrax infection may be carried and spread; (2) and in consequence of the first, the innumerable difficulties which must stand in the way of even reasonable control of the disease, in the absence of strict sanitary procedure, and especially with reference to the careful disposal, intact, of the charbonous carcass, with its seething mass of infection, which furnishes, under insanitary conditions, the main supply for transmission by and through the various agencies mentioned.

Bearing these points in mind, then, how shall we proceed in order to secure the most salutary results in combating and controlling this fatal and most costly malady?

In making recommendations, after an experience of almost thirty years in your neighboring state, Louisiana, my first would be *sanitation,* including all that that term implies; second, *judicious vaccination,* with potent material, and in the hands of competent individuals, in areas previously infected, or contiguous thereto; and third, *cultivation and drainage of infected lands,* where that is possible or practicable, in order to turn under, or carry off, or both, some at least of the existing surface infection.

I have placed sanitation first, because I look upon it as the basis of control, although I fear it is the branch of the work that is most often neglected, resulting in wider spread of the disease.

If sanitation had been a great deal more thorough during all of the past years, anthrax infection might have been very greatly limited in area in our section, because of the fact that the source of supply would have been considerably

curtailed, and, therefore, less obtainable by the various carriers which are responsible for its dissemination.

Vaccination, under present conditions, however, is absolutely essential; not as the sole measure, but as a most valuable aid, along with sanitation, in protecting animals against fatal attacks, and thereby reducing the number of infected carcasses. But for best results, the two must go hand in hand.

I have been impressed with the fact that many of our people, ignorantly of course, seem to place their sole faith and dependence in the use of biologics as the only method of procedure necessary to adopt in the handling of a contagious disease. We see this illustrated in the case of both anthrax and hog cholera.

They appear to imagine that vaccination is a bonanza that will not only give their animals protection, but eradicate infection at the same time. Of course they are rudely awakened to their error when disease breaks out the following season as the result of the previous infection. If, on the other hand, they would employ both protective and sanitary measures, they would probably accomplish both; that is, the saving of their animals, and the control of the infection on their premises. To control anthrax infection, vaccination is one of the methods that must be resorted to; but to lessen the supply and prevent future trouble, we must certainly disinfect diseased carcasses, and use disinfectants liberally where needed, as all animals susceptible to the disease are not likely to be protected by vaccination.

In conclusion, permit me to suggest a combination of factors which, in my judgment, are essential, if we are to anticipate the most satisfactory results in the control of anthrax in certain areas of our Gulf States. I do not mean absolute control, as that would be too much to expect with so much permanent infection already present on some of our grazing lands; but such control as would gradually limit the extension of the disease, and minimize the losses that hitherto have been so severe on account of the spread of this malady. These are: (1) effective live stock sanitary legislation strictly enforced; (2) education; (3) cooperation; and (4) the elimination of politics from work of such a serious and important character.

I need not enlarge upon the necessity for sanitary legislation, as we are all familiar with the importance of it in this connection, except to emphasize the urgency of destroying all infected carcasses, when at all possible.

Education a Prime Essential

Education, however, is a prime essential, about which I would like to say a word or two.

In my own experience, covering a considerable number of years, I still find that the greatest barrier to sanitary progress along this line, is the ignorance, or misinformation, of stockowners themselves relative to the true nature of anthrax, and, necessarily, of the life, history and habits of the organism which produces it, notwithstanding the vast amount of information that has, for years, been made available through different channels.

They do not realize that the disease, so-called, is merely the result of microbic invasion, and that if they will destroy the cause, i. e., the germs, the effect will cease. That it would be much less expensive to destroy an animal suffering from anthrax, and have its carcass cremated, if by doing so it would destroy the infection, and put an end to its further spread; rather than attempt to treat a case without the observance of any sanitary precautions, and after its death have the infected cadaver thrown to the buzzards, so to speak, and no check whatever placed upon the dissemination of the deadly bacteria. It is the germs we have to fight; and it is vitally important that stockowners should be advised and informed, by every means possible, concerning a few of the more practical sanitary points, so that they might have a more intelligent idea of how to proceed with their part, in trying to control charbon infection. Or, in other words, that the battle against a disease of this kind can be successfully staged only by adopting every effective means to combat and

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Lesions Due to Agents Used in Killing Experiment Dogs in Anthelmintic Investigations*

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THE investigation of anthelmintics involved in a general way two problems; a consideration of the actual anthelmintic activity displayed in the removal of worms and a consideration of the transient and permanent effects of the anthelmintic on the host; in other words, the effect of the anthelmintic on the parasite and on the host. The anthelmintic value or efficacy of a treatment is ascertained rather accurately by a consideration of the number of worms removed within a reasonable time and the number remaining after that time, the number passed being found by an examination of the feces for the time involved and the number left being found by postmortem examination. This is the experimental laboratory method. Less accurately, the efficacy may be ascertained by a comparison of the number of worms removed by a first treatment with the number removed by a second treatment or other subsequent treatments, and this is the method used in medical practice. The immediate and remote effects on the host may be ascertained by clinical observation, by the more exact methods of the physiological and pathological laboratory, and by postmortem examination. The information available by postmortem examination is unfortunately seldom available in medical practice, but in experimental work all these methods may be employed. The study of the effect of the treatment on the host is highly important, as anthelmintic treatment is often very severe, commonly more or less of a shock, and potent anthelmintics are nearly always more or less toxic substances, supposed to be comparatively insoluble, as a rule, but actually rather soluble, which may initiate a series of pathological conditions beginning with gastro-intestinal irritation and inflammation and terminating in death.

*Read before the Southeastern Michigan Veterinary Medical Society, April 10, 1918.

Differentiation of Lesions

In examining an experiment animal for lesions due to anthelmintic treatment, it is imperative, in the interests of the best work, that one undertake to differentiate the lesions due to the treatment from lesions due to disease, accident, or the agent used in killing the experiment animal, and the present paper is primarily a consideration of the lesions to be expected in connection with a limited number of methods of killing animals, the animals in this case being dogs. This work is based on some of the findings in a study of 300 cases.

The great majority of our experiment dogs were killed in one of three ways: (1) by chloroform inhalation in a box; (2) by intraperitoneal injections of alcoholic solutions of chloretone (trichlortertiarybutyl alcohol, $C_4H_7OCl_3$) in 40 per cent solution at the rate of 1 mil per kilo, as recommended by Rowe (1916)[1], the animal being opened under profound anesthesia; (3) by shooting the animal through the brain with a .22 caliber revolver with a 4.5-inch barrel. In shooting, the short cartridges are apparently as effective as the long, usually, and it makes no difference that we can detect, so far as the lesions are concerned, whether the animal is shot in the frontal region where the cross-lines from the eyes to the opposite ears intersect, or in the parietotemporal region, or in the occipital region.

Certain types of visceral lesions found to result from the employment of these methods in killing dogs, are as follows:

Chloroform. Dogs killed by chloroform inhalation very commonly exhib-

[1]Rowe, L. W. 1916. Trichlor-tertiarybutyl alcohol anesthesia. J. Pharm. & Exp. Therap., Vol. 9 (3), Nov., pp. 107-112.

it a hyperemic condition of the mucosa or submucosa of the duodenum or jejunum or, usually, of both. The word *hyperemic* is used here loosely to designate hyperemia, congestion, and inflammation, associated at times with hemorrhagic conditions. In routine postmortem examinations, lesions are sometimes so sharply defined in their nature that microscopic examination is sufficient to enable one to designate the lesion fairly accurately, but there are borderline cases and vague cases that must be grouped under some general term in a consideration of this sort. This hyperemic condition in dogs killed by chloroform inhalation is of considerable interest in experiments on anthelmintics, since anthelmintics are commonly gastro-intestinal irritants and their irritant effect must be judged largely by the hyperemic condition of the duodenum and jejunum.

Chloretone. Dogs killed by opening under anesthesia due to preliminary intraperitoneal injections of chloretone very commonly exhibit a highly congested spleen, the spleen being occasionally three times as large as normal. Such spleens present a peculiar smooth, tense, bluish capsule as a result of the high pressure of the contained blood. On cutting the splenic vessels or incising the spleen, there is a very rapid and considerable diminution in the size of the spleen, but it rapidly returns to practically normal size. However, it sometimes happens that blood-cysts, what might be loosely termed "blood-blisters," spaces filled with blood, sometimes rather large (1 cm. in diameter), form in the splenic pulp or just under the capsule. This lesion has little significance, as it could not result from the use of any anthelmintic of which I am aware, but it is of interest in that it does not appear to have been known, even by persons familiar with chloretone and habitually using it, that this lesion might result from intraperitoneal injections of the strength noted. Such injections would furnish a convenient method of producing splenic lesions for pathology classes and for certain studies on the spleen.

Shooting. Dogs killed by shooting through the brain commonly exhibit extravasations in the heart muscle and the lung tissue. These extravasations may be petechial or ecchymotic, or may be extensive dark blotches. They may be visible on the inside and outside of the heart and through the muscles wherever incised, or may be limited in location, and may be visible under the pulmonary pleura, through the lung tissue and in the bronchi, especially in the terminal portions, or may be limited in extent.

Findings in Killed Animals

The extent to which these lesions are characteristic of the deaths with which I associate them may be judged from the extent to which they are present and readily visible in animals killed by these three methods, and a consideration of findings for these animals is given next.

Chloroform. Chloroform was used to kill 102 dogs, one of these dogs having been given a preliminary dose of chloretone intraperitoneally. The characteristic hyperemia of the duodenum was present in 69 cases (69 per cent) and of the jejunum in 64 cases (64 per cent). From each of these should be deducted 2 cases, where dangerous doses of anthelmintics, less than the lethal dose but in excess of the safe therapeutic dose, and therefore very apt to occasion hyperemia, had been given, making 67 cases (67 per cent) with hyperemia of the duodenum and 62 cases (62 per cent) with hyperemia of the jejunum, in cases where only therapeutic doses of anthelmintics or even smaller doses, were given. Comparing these figures with those for chloretone, we find that in 36 animals killed after chloretone injections intraperitoneally, 15 showed hyperemia of the duodenal mucosa and 18 showed hyperemia of the jejunal mucosa. From these figures should be subtracted 2 cases where a lethal and a dangerous dose, respectively, were given, making 13 cases (36 per cent) of hyperemia of the duodenum and 16 cases (44 per cent)

of hyperemia of the jejunum. Comparing the foregoing figures with those for shooting, we find that in 116 animals killed by shooting, 37 showed hyperemia of the duodenum and 35 showed hyperemia of the jejunum. From these figures for duodenal hyperemia should be subtracted 4 cases of lethal and 4 of dangerous doses, and from the figures for jejunal hyperemia should be subtracted 8 cases of lethal and 5 of dangerous doses, making 29 cases (25 per cent) of hyperemia of the duodenum and 22 cases (19 per cent) of hyperemia of the jejunum.

My attention was first called to the production of hyperemia of the upper portion of the small intestine, following chloroform inhalation, by Dr. Jacob Traum some years ago at a time when he and I were both working in the United States Bureau of Animal Industry. The dilation of the abdominal vessels under chloroform was noted years ago by Peck, but it is perhaps not generally known and appreciated.

The explanation for the production of intestinal hyperemia by chloroform is perhaps the following: It may be due in part to swallowing mucus with its chloroform content during anesthesia, the chloroform exerting its irritant effects directly on the intestinal mucosa; and due in part to the fact that chloroform acts as a depressant to the heart and to the vasomotor centers, so that with the resulting fall in blood-pressure the blood tends to collect in the abdominal vessels, perhaps due to the fact that these relaxed vessels have less surrounding pressure on them than the vessels of the skin and voluntary musculature. It appears likely that chloretone, also, may narcotize or anesthetize the vasomotor nerves of the digestive tract, thus producing the hyperemia which occurs oftener in dogs killed after chloretone than in dogs killed by shooting.

The occurrence of this intestinal hyperemia in practically two animals out of every three when killed by chloroform, makes this method of killing experiment animals unsatisfactory for experiment work where the irritant effect of anthelmintics is to be considered.

Chloretone. Chloretone was used in killing 36 dogs. A congestion of the spleen was noted in 21 cases (58 per cent), and in over half of these cases the spleen was from 50 per cent larger than normal to three times as large as normal. In comparison, a congested spleen was found in dogs killed with chloroform in only 6 cases, one of these in a dog prevously given chloretone, leaving 5 cases (5 per cent). In dogs killed by shooting, a congested spleen was found in 3 cases (2.6 per cent). In no case where dogs were killed with choloroform or by shooting was a spleen found showing the enormous enlargement found in animals given chloretone intraperitoneally.

The explanation for this congested spleen probably is that the vasomotor nerve control is narcotized or anesthetized, thereby causing an inhibition of the vasoconstrictor nerve control and allowing vascular dilation and distention.

Shooting. Shooting was employed in killing 116 dogs. Extravasations of the heart were found in 93 (80 per cent) and of the lungs in 78 (67 per cent), and a more careful examination, with a "shredding" of the heart and lungs, or a microscopic examination, would probably have shown this condition in more animals, though probably not in all of them. In comparison, hemorrhages of the heart were observed in no instances in dogs killed with chloretone or choroform, and hemorrhages of the lungs were observed only in 2 cases (6 per cent) in dogs killed with chloretone and in 5 cases (5 per cent) in dogs killed with chloroform.

The explanation for these lesions is presumably this: The shot occasions sufficient shock to the brain to destroy the cardio-inhibitory center, the vagus inhibition control of the heart is removed, and with this brake off, the heart, under the influence of its accelerator control, immediately races to a speed of 200 to 225 beats a minute, respiration simultaneously ceasing. Under the back pressure of the blood, espe-

cially in the pulmonary circulation, the pound of the heart is sufficient to cause these extravasations and, at the other end of the line, the pressure in the pulmonary circulation drives the blood out into the lung tissue. The lungs are almost always distended and remain so after the thorax is opened, instead of collapsing. In one animal, the lobes on one side were distended and showed extravasations, while the other lobes were collapsed and free from extravasations. Extravasations appear to be more numerous and extensive in the left lobes. The ventricles, pumping against the pressure of the systemic and pulmonary circulation, suffer more than the auricles, and the right side of the heart, pumping against the pulmonary pressure, suffers more than the left side. Lesions are visible on the inside of the heart a little oftener than on the outside. Extravasations were visible as follows: In the right ventricle, 64 times; on the right ventricle, 53 times; on the left ventricle, 53 times; in the left ventricle, 45 times; in the right auricle, 31 times; in the left auricle, 27 times; on the right auricle, 23 times; and on the left auricle, 19 times.

Feeble animals are apt to be free from extravasations of the heart and lungs, and it is possible that in the case of these dogs, and some others, the heart is stopped as a result of shock affecting the accelerator control of the heart or as a result of a weak heart stopping under the overload put on it by the back pressure in the lungs.

These lesions do not appear to be generally known. On examination of La Garde's (1916)[1] treatise on gunshot wounds in man, I find no mention of the immediate effect of gunshot wounds of the head on the heart action, and I have not yet been able to get data on this point in regard to man. The lesions might be mistaken for hemorrhagic septicemia, for those resulting from asphyxia or, to some extent, for those from strychnine poisoning. We found pulmonary hemorrhage in all cases where four dogs were killed with stychnine. It might be urged that a bullet wound in the head is the best evidence that an animal was shot, but occasionally this lesion is hardly discoverable, a small hole with no bleeding and concealed by long hair being easily overlooked.

There are two fields in which lesions of this sort might be looked for in animals. One is the abattoir, where beeves are killed by trauma, "knocking" on the head with a sledge hammer, followed by bleeding (cutting the throat), and the other is the hunting field where game is shot, occasionally through the head or neck, a condition practically identical with that used in our killing of experiment dogs. In regard to the first, I am informed by Dr. E. P. Schaffter, the Bureau of Animal Industry inspector-in-charge at Detroit, that they occasionally find extravasation in beeves, the lesions occurring at times in the muscles of the loins. As a rule they are not present. Apparently the stunning blow on the head is not usually sufficient to destroy the functioning of the cardio-inhibitory center. These lesions are not found in sheep or hogs, which are not stunned. In regard to the second field, hunting, Dr. Clifford E. Parker tells me that he has seen extravasations of the heart or lungs in the deer, fox, and raccoon after being shot in the head or neck, and has seen one raccoon carcass thrown away on account of these lesions.

In passing, it may be said that a dog shot in the right way collapses and stiffens, and then very soon relaxes and begins to wag its tail. The oculopalpebral reflexes are abolished immediately. The frontal shot causes profuse bleeding as a rule, while the parietotemporal or occipital shots may or may not be followed by bleeding. The aperture is sometimes sealed against bleeding by a piece of torn brain tissue. While any of these shots will usually kill a dog, I have had bullets flatten and split in the region of the parietal crest and the nuchal crest, and this observation and others lead

[1] La Garde, Col. Lewis A. 1916. Gunshot injuries. How they are inflicted. Their complications and treatment. N. Y., 2 ed., 457 pp., 160 figs.

me to think that with a small calibre gun, the best shot is one carefully centered on the intersection of the crossline from the eyes to the opposite ears and with the gun pointed back toward the cerebellar region.

Dogs which are run over by automobiles and survive, not infrequently show a damaged spleen, repaired with omental adhesions, as the sole evident lesion. There were 6 such cases in our series of 300, or 2 per cent.

Lameness: Some Basic Principles of Diagnosis

By M. H. McKILLIP, M. D., V. S., Chicago,
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THE art of diagnosis as applied to any group of diseases is possible only when there exists a scientific classification of those diseases based upon the main and characteristic signs and symptoms. When such classification has been developed, rules may be formulated by which one may be guided in the diagnosis, the results being accurate in proportion to the diagnostician's astuteness in observing and comprehending the basic symptoms from which these rules have arisen. Veterinary literature is replete with classifications of lamenesses upon various bases and each intended as an aid to diagnosis. These classifications and descriptions are, in many of the publications, as accurate as could possibly be made. The pathology and symptomatology of the various lamenesses are accurately and completely described and the classifications comprehensive. None have appeared, however, that offer much assistance to the novice in diagnosis inasmuch as they do not permit the ready application of rules of diagnosis and differentiation.

Classification and diagnosis of lamenesses (or any group of diseases) by the veterinarian is like the classification and diagnosis of plant forms by the botanist or animal forms by the zoologist. First, they must be grouped into main and sub-groups, the grouping being made upon easily recognized, standard, and characteristic features. After that is done recognition of an individual form is easy, providing the diagnostician is sufficiently familiar with the subject to recognize those features upon which the classification is made. The recognition of the presence of these standard and characteristic features in a case of lameness allows the diagnostician to place the case in a certain main group, then in a certain sub-group of the main group, and so on down in the classification, much in the same manner as that used by the botanist in naming a plant. The diagnostician, by a process of exclusion and inclusion, can readily apply the findings in a given case with his classification of lameness and arrive at a relatively accurate diagnosis. The proficient diagnostician makes use of similar methods in the diagnosis of any disease. Consciously or unconsciously he, with a more or less accurate system, arrives at a diagnosis by use of a classification of symptoms as applied to a similar grouping of diseases. The variability of symptoms, the difficulty in observing and interpreting symptoms, and the presence of complicating conditions make absolute accuracy in diagnosis impossible, but in a way detract from the value of a systematic method.

Veterinarians, when confronted with the usual difficulty and unpleasantness attending the diagnosis of lameness, should set about to obviate that difficulty and unpleasantness. They should dissect and study every organ concerned with locomotion; they should study particularly every phase of the physiology of each part, relative to its active function and also the conditions and forces to which it is passively subjected. They should try to estimate the interference with function and the outward expression of that interference that would result from a disease of the organs or parts

of organs. Studies should be made of the peculiarities of conformation of limbs and effect of these peculiarities of limbs on the natural gait of animals and on the station as well. The strength and weakness of parts of limbs depends upon the conformation of that part. A weak part is potentially a lâme part and deserves consideration in an examination. Studies of this sort coupled with the clinical study of cases and autopsies as checks will enable one to establish rules of diagnosis of lameness which will be found efficient and in the use of which the diagnostician will feel secure in his work.

To become proficient in the diagnosis of lameness, a full appreciation of the intricacies of the locomotory mechanism is necessary. One must have an understanding of mechanics. Lamenesses, we may say, are diseases largely of supporting columns, bearing surfaces, levers, fulcrums, pulleys, braces, ties, arches, etc., all of which are passive mechanical agents that are affected by the various mechanical factors of pressure, force, momentum, inertia, stress, strain, concussion, friction, etc. Unless one studies these organs from this viewpoint not much headway will be made in mastering lameness. The apparatus must be considered as a piece of engineering constructed to serve a set of mechanical functions that are extremely variable in their requirements. Efficiency will depend upon a properly designed and not overloaded mechanism at any or all points. The engineer in passing upon a piece of construction work considers design versus load; the veterinarian likewise, in the limb of a horse, considers design (conformation) versus the load (uses to which it is put). Of course, there are many lamenesses to which this comparison is not applicable but in the main it is useful, inasmuch as it enables one to appreciate predisposing qualities in a limb.

After having familiarized ourselves with the details of anatomy and physiology of the organs of locomotion and having also acquainted ourselves with the symptoms of disturbances of function of the various organs we evolved a scheme of diagnosis. The scheme classifies all lamenesses on a basis of symptoms; it also includes a system of examination by which the symptomatic evidence is uniformly collected. A comparison of the evidence collected in a given case with the classification of lamenesses enables one to diagnose accurately. One must be able, however, to see and interpret symptoms correctly. This is where the chief difficulty will arise. Here is where personal skill and ability in observation, analysis, and deduction is of great importance. Absence of visible and palpable lesions and of systemic signs and the impossibility of utlizing laboratory methods and other general diagnostic aids handicap the diagnostician of lameness. The variability of symptoms and the frequency of complications makes the work more difficult.

Not once in our career as a veterinarian have we resorted to the use of nerve-blocking with cocain or a substitute drug to diagnose and differentiate lameness, and we decry the use of the method. It is independable inasmuch as it leads to wrong conclusions, in many cases because of a retrograde action on the nerve blocked. The worst objecton to its use, however, is that it is an incentive to a slovenly, non-scientific, diagnostic technic and often causes the diagnostician to ignore and neglect the study of those features of lameness upon which a more accurate diagnosis may be based. In addition to these objections the use of nerve-blocking may be branded as entirely unnecessary, unscientific, and empirical.

We shall attempt at some future time to classify lamenesses on a diagnostic basis such as is used in our work. The reading of textbooks, however, will not make a man a diagnostician of lameness. All the outlines and rules of diagnosis that could be printed will be valueless unless he who would learn the art will first master details of construction and function and sharpen his power of observation.

Fee For Vaccinating Hogs

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IN professional life, "What constitutes a fair fee?" is the counterpart of the aggravated question of the business world "What is a fair profit?"

In the business world this question has been discussed, re-discussed, and just plainly "cussed," until it is no longer a fit subject for polite conversation between buyer and seller.

Each clings to his own opinion like glue. When they meet, the one strongly suspects the other of being a reincarnated pirate, while the other is fully convinced that the one would make a first-class understudy for an active porch-climber.

"What is a fair profit" is a question with as many angles as a well-cut diamond. Only when viewed in its broadest scope is a satisfactory answer possible. The buyer and seller, and possibly the veterinarian and his client as well, are too often in the position of two men standing on opposite sides of a fence, one side of which is painted black, the other white. They will never agree on the color of that fence until each takes a look at the other fellow's side.

A recent writer, in discussing this question of fair profits, quoted the following from President Wilson, who is noted for his ability to express his ideas in clear-cut English: "By a just price I mean a price which will sustain the industry considered in a high state of efficiency, provide a living for those who conduct it, enable them to pay good wages, and make possible the expansion of their enterprise, which will, from time to time become necessary as the stupendous undertaking of this great war develops. Such prices are necessary for the maintenance and development of industry. We could not wisely or reasonably pay less."

Applying the president's reasoning to the question of veterinary fees, did he not say, in effect: "By just fees, I mean fees that will enable the veterinarian to maintain a high state of efficiency in his service to his clients, that will afford him and his family a living, enable him to pay his bills promptly, and permit him to install in his practice and equipment, such time- and labor-saving devices and agencies as will enable him to serve a rapidly expanding territory, an increasing number of clients, and to minister to a rapidly increasing number of power- and meat-producing domestic animals; because this will be necessary as the stupendous undertaking of this great war makes necessary the withdrawal of more and more veterinarians from civil practice, and makes necessary the better safeguarding of the health and utility of greater numbers of all classes of domestic animals."

Because the veterinarian is a much-needed man in his community, and because his services must be equally available to all members of that community, it is plainly the duty of the community to pay him such fees as will enable him to give his services, quickly and efficiently. He must be able to keep his armamentarium complete with a well-filled instrument case and a well-stocked drug room. His automobile must be always ready for duty at a moment's notice. A blow-out in a too-long-run tire may cost a client a valuable animal, the community must support him well enough to keep his equipment in order. And all this, according to the president's analysis, in addition to providing a living for the veterinarian and his dependents, and preparing for the proverbial rainy day; for the president, humanly and rightly, ranks high in his thought, provision for those engaged in the industries which must be the support of the government.

Fees for Anti-Hog-Cholera Serum Treatment

Understanding, briefly, what the vet-

erinarian's fees must do, we may now consider what his fees should be, with reference particularly to one phase of his professional labors, the use of anti-hog-cholera serum in the treatment of swine.

The educational work of the Bureau of Animal Industry and of authorities engaged in educational and disease-control work in the various states, without which serum treatment for hog-cholera might be yet practically unknown, has acquainted the farmer and stock-raiser with the principles of this treatment to a greater extent than with other lines of veterinary practice.

Because of the publicity which the treatment has received, and which was absolutely necessary to make it effective, it was inevitable that its very popularity would induce many persons to undertake the handling of it who were lacking in qualifications, As a result, the profession has encountered much lay competition, which has been increased and extended by the action of some misguided serum producers who have made their products available for use by untrained operators, and which has increased the difficulties of the competent man. An incompetent operator, whether lay-man or veterinarian, quickly engenders in a community such distrust of the treatment, even when used by competent men, as to greatly decrease that community's valuation of such service.

For these reasons the veterinarian has apparently felt that he has been in a different position with regard to this particular line of work and he has felt called upon to find a different basis upon which to fix his fees than that by which fees are regulated in his other lines of practice. As a result, practitioners of different localities have adopted fee systems, and a wide variance has resulted between the methods of fixing fees in different states and in different sections of the same state.

In some places it has become customary to base the charge at so much per mil (c. c.) for the serum used, the veterinarian including his fee in the price charged for the serum. In other localities, a flat price per head for the treatment of animals of different weights is made; others charge a certain amount per head for the administration of the treatment, in addition to the cost of the serum; while others include with the latter charge, a certain fee for the trip. Variations of these fee systems include additional charges for disinfectants, expense of telegrams, telephone, express charges, etc.

Criticisms and objections to all these systems have been made, from the viewpoints of both veterinarian and client. In fact, it is beyond the realm of probability that any system will be devised that will prove satisfactory to everyone, and the writer certainly does not hope to produce any universal panacea, for it is only with the hope of inducing further consideration of this question by the profession that this is written.

In the first place, let us accept without argument, the fact that the experiences of the past few years have conclusively demonstrated the soundness of the following proposition: that the greatest real value to the swine industry can be obtained from the serum treatment only when its use is confined to competent professional hands. The reader, is, of course, familiar with the difficulties professional men have encountered in accomplishing this.

Difficulties Due to Misinterpretation

But is it not true, in some instances, that these difficulties have been due, partially, to the manner in which fees for vaccinating swine have been calculated, or to the misinterpretation of those fees by swine-owners? Is it not true that veterinarians have been accused many times of exacting excessive fees, and of making profits out of all proportion to the service rendered? And is it not also true, that reports and accusations of this kind have greatly encouraged lay competition in this work? A number of articles in farm and stock journals have come to the writer's attention in which some disgruntled owners have aired

their alleged grievances, and to their own way of thinking, convicted veterinarians of something little short of highway robbery. Such articles and such discussions among stockraisers, whether founded on fact or not, do much to arouse unwarranted public distrust of the whole profession.

From the standpoint of the veterinarian the objections to the systems previously referred to—the charge per mil, or per weight of animal, or per head—are largely due to the variation in the time necessary for treating a given number of animals. One client will provide plenty of help, will have his herd corralled and ready, his premises properly prepared; the work moves quickly and a minimum amount of the veterinarian's time is required for treating the herd. When the veterinarian arrives at the next farm he finds the hogs running at large, sufficient help not at hand, no preparation has been made for proper quarters for doing the work or housing the animals after treatment; the veterinarian's time is taken while all these deficiencies are supplied. Should each of these clients pay the same fees? Most assuredly not.

Let us view the client's side of the fence for a moment; he naturally will pay a fee with poor grace if he does not understand exactly what that fee covers. Whether unjustly or justly, veterinarians have laid themselves open to the suspicion on the part of their clients that there may be a bit of camouflage in fees as they are often figured. Doubt as to the true cost of the product used, as to the amount of serum used, as to whether over-dosage or under-dosage was given; all these have been charged against practitioners to the detriment of all concerned, and in the great majority of cases unjustly charged because the client did not understand what was covered by the fee—he couldn't see the other side of the fence.

To both veterinarian and client, it would seem that the most satisfactory fee system would be one by which the client pays for a definite amount of professional service.

Proper Valuation for Service

How shall the proper valuation for professional service in the immunization of swine be found? On what shall the valuation be based, so that both doctor and client, or, in reality seller and buyer, can find a common ground on which to meet and agree; so that each can view both sides of the fence?

Again the writer disclaims any intention of offering any universally satisfactory solution to this problem, but wishes merely to suggest that in other lines of practice the value of professional service is determined by two factors: the degree of professional skill; and the time required for the service. Should not the same factors determine the fee in this work?

It is the operator's duty to employ in his technic such measures as will demonstrate to his client that professional skill is a necessary part of his work, that his scientific knowledge is a factor in successful immunization, and does have a definite cash value in proportion to his expertness.

The time element of the fee is fair and just, and that it can be largely governed by previous preparations made by the client himself is obvious.

If such charge is made on the basis of the time consumed, which should mean the time the doctor is actually away from his office on the client's service, the amount of the fee per hour or per day, should be governed by the amount of scientific skill which the operator applies to the case in hand.

No reasonable owner will object to a fair—yes, a liberal fee for the time consumed and service rendered, if the technic employed by the veterinarian has convinced him that better work was done than he could have obtained from a less competent operator, though at a less price.

Although many swine-owners have the erroneous idea that the administration of serum and virus is merely a mechanical procedure and can be done by almost any one, the real facts are that the veterinarian who makes a scientifically correct application of the serum treatment and observes all of

(*Continued on Page* 420)

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The Philadelphia Meeting of the A. V. M. A.

THE 55th annual convention of the American Veterinary Medical Association will be held at Philadelphia, beginning August 19th and lasting four days. The local committee feels much encouraged by the prospects of a good meeting and expects a record-breaking attendance.

That the meeting will be an important one for the members and for the entire profession is certain; that the attendance will be up to the average seems doubtful. Railroad fare, including the extra Pullman fare and the tax on both, has advanced 75 per cent within the year; the cost of meals on trains and at hotels has advanced perhaps as much; because many hundreds of veterinarians have been withdrawn from practice, those remaining are busier than ever before; and lastly, the many calls upon the finances for Red Cross, Y. M. C. A., and numberless other contributions and for the purchase of Liberty Bonds and War Savings Stamps, may prevent many from going to Philadelphia and possibly reduce the attendance considerably below that of recent meetings.

Entrance Requirements and Length of Course

Among the most important matters to be considered at this meeting is the standard of entrance requirements for accredited veterinary colleges and decision as to the length of the course and standard of instruction given in such colleges. The amendment offered by Dr. L. A. Klein at Kansas City, prescribing regulations for these matters must come up for consideration. It should be modified to conform with the rulings of the surgeon general and adopted, thus establishing, once and for all, the policy of the association in these matters. The uncertain attitude of the association in the past in the matter of veterinary education has led to no little confusion, and in some instances has worked hardships. Some progress has been made, it is true, but it has been inconstant—varying, not to say actually vacillating.

The contest between the state and the private veterinary colleges which in the past has often obscured the issue and prevented action aimed solely for the welfare of the profession, should not be in evidence this year. Apparently it will not be, and the association will be free to decide this question on its merits unswerved by the adherents of either school faction.

B. A. I. Section Needed

The large membership that is accruing to the association from veterinarians in the employ of the B. A. I. constitutes another problem which should be solved at the coming meeting. Last year a goodly portion of the applicants for membership were from the ranks of the B. A. I. More than half of the applications in the hands of the secretary at the present writing are from the same source. Their interests are in many respects widely dif-

ferent from those of practitioners and college men, although in no respect antagonistic. Provision for members in the B. A. I. should be made in programs of the association and in its policies. This it appears can be accomplished most advantageously by organizing a B. A. I. section in the A. V. M. A., just as there is a section on practice, a section on sanitation, and a section of college faculties and examining boards. Such a section would probably satisfy the needs of the Bureau men for an association, and the present association of Bureau of Animal Industry Employees could be discontinued.

Preliminary Announcement of Program

That military matters will come in for much consideration by the association is of course assured.

The program being arranged for the association is not yet completed; the following will be included in it:

The Chloramine Antiseptics and Disinfectants (illustrated), N. S. Mayo, Chicago.

Certain Aspects of the Pathology of Spavin (illustrated), S. A. Goldberg, Ithaca, N. Y.

Differential Diagnosis of the Diseases of the Pig, W. W. Dimock, Ames, Iowa.

Some Surgacial Operations in Swine, T. H. Ferguson, Lake Geneva, Wis.

Practical Methods of Prophylaxis Against Worm Infestations, B. H. Ransom, Zoologist, B. A. I., Washington, D. C.

Practical Methods of Treatment for Worm Infestations, Seymour Hadwen, Pathologist, Dept. Agr., Ottawa, Canada.

Discussion of Papers on Parasites, E. L. Quitman, Chicago; W. Horace Hoskins, N. Y.

Avian Tuberculosis in Swine, L. Enos Day, Chicago.

Army Veterinary Matters, Major John P. Turner, V. C., N. A., Washington, D. C.

Veterinary Education, A. H. Baker, Chicago.

The Veterinary Practitioner and the Control of Infectious Diseases, V. A. Moore, N. Y. State Veterinary College at Cornell.

Status of the Animal Industry of the United States, J. J. Ferguson, Chicago.

The Practical Application of the Blood Tests in the Control of Contagious Abortion, C. P. Fitch, University Farm, St. Paul, Minn.

The Bang Virus and its Relation to Endometritis, Metritis, Abortion and Sterility, John F. DeVine, Goshen, N. Y.

Suggestions for Legal and Regulatory Measures Against Bovine Infectious Abortion, Ward Giltner, Mich. Agri. College.

Discussion of Papers on Contagious Abortion, E. T. Hallman, Mich. Agri. College.

Hog Cholera in the East, Edward A. Cahill, Indianapolis, Ind.

Tuberculosis Eradication, John A. Kiernan, B. A. I., Washington, D. C.

Standardization of Blackleg Vaccine, L. W. Goss, K. S. A. C., Manhattan, Kas.

Some Investigations on Sheep Diseases in Colorado, Geo. H. Glover, I. E. Newsom, and E. W. Alkire, Ft. Collins, Colo.

Clinic at the Veterinary School.

Trip to H. K. Mulford Co.'s Vaccine Farm and Biological Laboratories, Glenolden, Pa.

Boat ride on the Delaware River and visit to ship yards.

LADIES' PROGRAM

Reception,
Relief Fund Meeting.
Sight-seeing Trip.
Card party.
Theater.
Auto trip to Valley Forge.
Banquet.
Trip to Girard College.
Boat ride on Delaware River.

Left to right: Lt. Worsham, Lt. E. J. Scheloski, Lt. S. C. Arnold, Maj. R. M. Staley, Surgeon-General Gorgas, Secretary of War Newton Baker, Capt. R. O. Byerrum, Capt. J. L. Wright, Lt. C. E. Richardson, at Camp Greene, Charlotte, N. C.

Army Veterinary Corps Miscellany

IT is with a great deal of satisfaction that we publish the article in this issue by Major Cotton. of Chicago. There is much encouragement in this excellent account of the splendid accomplishments of the veterinary corps, and much good may come from the Major's advice to practitioners as to their duties during the war period.

As the first comprehensive statement concerning the organization of the veterinary corps that has been made public, it will be read with the greatest interest by veterinarians in the army and by those in civil life as well.

Those in the main responsible for the organization and direction of the veterinary corps would be the last to say that its functioning has been wholly satisfactory or that mistakes have not been made, but the record given by Major Cotton shows accomplishments of no mean degree and certain progress, and is a sufficient basis upon which to found hopes for an even better record in the future.

A Director of Veterinary Service has been appointed during the month—Colonel C. F. Morse, for sixteen years an officer in the medical corps of the army. That a veterinarian should head the veterinary service of the army is not open to question; that the veterinary corps would accomplish more so organized is a truism, but with a medical officer at its head not all is "a loss and no insurance" by any means. Lieut.-Col. Morse is an officer of much experience and great ability; he is well liked and highly respected by the veterinary officers who know him and he has at his command the advice and counsel of the veterinary officers attached to the surgeon general's office.

The 1918 veterinary graduates in the M. E. R. C. have been called to the colors and assigned to Camp Greenleaf or to Camp Lee for instruction. After undergoing preliminary training, and not before, they will be authorized to take the examination for commissions as second lieutenants in the veterinary reserve corps.

The promotion of Majors White and Stanclift, as announced elsewhere, meets with the approval of the corps.

* * * * * *

The veterinary corps is having difficulty in getting enlisted men for its meat inspection who have had the necessary experience in the bureau of animal industry. It is desired to employ in this capacity only men who have had at least one year's experience in the bureau. This force, which, if it can be augmented to its desired numbers, will muster between 150 and 200 men, will inspect all meats and meat products bought by the depot quartermaster at Chicago and the lesser depots in other cities to see that it complies with the specifications. This covers nearly all the refrigerated beef, canned meats, ham and bacon, whether sent overseas or issued to troops in camp here.

Packing-house processes are watched by these men from the initial to the final stage, to insure that the soldiers are fed only meat from sound animals, properly prepared, and packed.

Each army division has a veterinary officer attached as meat inspector, and each cantonment is allotted a division or camp inspector, with two enlisted assistants.

The meat inspection service of the veterinary corps has expanded with the growth of the army since the outbreak of the war. All meats and meat products purchased by the depot quartermaster in Chicago and the subsidiary depots in other large cities are carefully inspected for compliance with specifications. This covers practically all the refrigerated beef, canned meats, ham and bacon, that are sent to the overseas forces or issued to troops in this country. Veterinary meat inspectors remain in the packing houses and observe the process from the selection of the meat to the sealing of the cans in which it is packed. Every step in the process receives a critical scrutiny in order that the Government may secure only meat from sound animals which has been properly prepared and preserved for transportation.

The service in Chicago is supervised by Major George A. Lytle, V. C. N. A., assisted by forty-three veterinary officers who are trained meat inspectors and twenty-five enlisted men. Meat inspectors who have been properly trained under the regulations of the Bureau of Animal Industry are the only ones engaged in this work and some difficulty is encountered in securing enough men for the enlisted force in particular. These enlisted men are not veterinary graduates but must have had at least one year's experience with packing house methods. Men of this class who are subject to the selective draft or who wish to enlist should communicate with the Surgeon General stating their qualifications.

A veterinary officer is attached to each division as meat inspector and each cantonment is allowed a division, or camp, meat inspector with two enlisted assistants. Officers and men selected for this work are sent to Chicago for the course of instruction before assignment to stations.

HEADQUARTERS OF THE ARMY VETERINARY CORPS

By I. C. Brenner

If there is anyone of the opinion that the officers directing the veterinary corps down at Washington do not know what is going on at the various army camps he is certainly badly mistaken. After paying a visit to every camp in America with the exception of two, and after having talked with some seven hundred veterinarians in the army I thought that I knew just a little bit more than anyone else regarding what was going on at these camps. But when I visited the Surgeon General's offices at the capital I soon learned that the directors of the veterinary corps knew not only as much as I did about the men in the various camps but considerably more.

I spent four "exceptional" hours interviewing Lieutenant Colonel C. F. Morse, Director General of the Veterinary Corps, Lieutenant Colonel Marshall and Majors Stanclift, White and Hornbacker. I call them exceptional hours because the privilege and courtesy extended me in having an opportunity to talk with these men is certainly an unusual one. Colonel Morse is a physician of sixteen years' service in the army; Major Stanclift is a veterinarian of twenty years' service in the army, and Major White, as most of us know, is the well known and efficient Dean of the Ohio State University. Majors Turner and Klein are connected with the Surgeon General's offices in Washington, but unfortunatly I did not get to see these men as they were not in during my call.

There is one thing positive about the purpose of Colonel Morse and his aides, and that is they mean business as regards everything pertaining to the veterinary corps. Each of these men is

Left to right: Capt. J. J. Donnelly, Lts. Brown, Adams, Moye, Hunter and Kepp, of the Camp Wadsworth Division; Capt. Brood, Chief Veterinarian of the Camp Wadsworth Remount; Lts. Behney, Conn, Beck, Dunn, Morris and Foster, of the Camp Hancock Remount, Augusta, Ga.

striving every minute of the day and throughout many hours of the night to improve the efficiency of the veterinary corps. I have always been of the opinion that merit was sure to win with every individual identified with this gigantic issue. I am now positive that the man who has the ability, the man who shows he has the real stuff in him, the man who is capable and exercises energy to prove his qualifications, is the man who is certain to receive recognition.

There is a lot of room higher up for the man who is able to prove his worth. At this time there are a number of majorities, captaincies and first lieutenancies available. The work of every individual in the service is being watched closely and carefully. Reports on the work of every man are being collected from various sources. Much reliance is being placed on the inspectors who make visits at intervals to the various camps. These inspectors are men who know the practical side of veterinary science and who investigate and determine the character, disposition, and personality of the officers they call on. Their reports are given the utmost consideration in Washington, and advancement and promotion of veterinary officers depends to a large degree on what these inspectors see, know, and hear.

Colonel Morse, I am happy to report, is very well pleased with the general workings of the veterinary corps. The general condition of affairs has improved wonderfully since the corps was first organized. The results obtained by the men have been marvelous. There is absolutely nothing to the feeling, sometimes held by a few, that friendship, politics, or the like enter into the matter of promotions. As stated in the foregoing, men are judged wholly on their qualifications. It is up to each individual to make good or fall down. The general feeling at Washington is that conditions as they now exist are very satisfactory. The officers who are guiding the destiny of the veterinary profession in the United States Army would certainly rather promote a man than demote him. However, if a man is unable to prove his mettle there will be no hesitancy in reducing a man who is holding an office he is not qualified to fill.

An interesting point that my interview revealed is the fact that a number of promotions have been made to men now in service overseas. These promotions are made on recommendations furnished by General Pershing.

It is the intention of the officials to have every veterinarian in the service go through the training school at Camp Greenleaf. At the present time there are two hundred commissioned men there, and some seven hundred men in the enlisted personnel. The latter are privates, most of them 1918 graduates. They will be given a chance for a commission after serving in the ranks for some five or six months. Every effort is being made to prevent disturbance in the field of the practitioner. Colonel Morse and Major Stanclift told me that they realize the vast importance of the live stock industry in this country and that, so far as possible, a sufficient number of veterinarians would be held in the country at large to look after the care of food-producing animals.

Aside from appreciating my opportunity to see Colonel Morse and the members of his staff in Washington I enjoyed immensely my being with these men. Every one of them is a man of experience and good judgment. They know human nature, and in my humble estimation I feel sure that they are well able to take care of the important duties assigned to them.

RECENT APPOINTMENTS, PROMOTIONS AND ASSIGNMENTS

Fish, P. A., appointed Major in Veterinary Corps.

Foster, Maj. F., to Camp McClellan.

Pick, Capt. W. R., promoted to be a Major. Sent to Camp Taylor.

Gage, Capt. F. B., to Camp Kearney.

Following promoted to be Majors; Capts. Booth, T. O.; Gwinner, C. W.; Connely, J. J.; Towner, A. N.

Head, Capt. G., Lange, Capt. A. F., and McAuslin, Capt. R. A.; promoted to be Majors.

Majors D. S. White and R. J. Stanclift promoted to be Lieutenant-Colonels.

Cramer, Capt. E. J., to Camp Greenleaf

for inst.

Carnahan, Capt. C. H., to Camp Lewis.

Pile 1st Lt. E. F., and Lamb, 1st Lt. M. B.; 1st Lt. Hrace S.; Eakins, Coffine, 1st Lt. R. J.; Luce, 1st Lt. D. S..

Brod, Lt. G., and Crawford, 1st Lt. N. N., promoted to be Captains.

Coffine, 1st Lt. R. J., promoted to be a Captain.

Dean, 1st Lt. W. H.; Gest, 1st Lt. J. D., and Henry, 1st Lt. C. F., promoted to be Captains.

Wells, 1st Lt. J. L.; Elson, 1st Lt. R. E., and Moye, 1st Lt. R. A., promoted to be Captains.

The following instructors at Camp Lee, Petersburg, Va., have been promoted to be captains: 1st Lts. J. R. Stifler, W. E. Muldoon, J. V. Lacroix, J. W. Claris, I. Myers, F. H. Mackie, C. M. Haring.

Brown, 1st Lt. W. J., to Camp Lee.

Modlin, 1st It. E. D., to Camp Gordo with Remount Depot.

Metcalfe, 1st Lt. F. E., Jr., to 312th Cav.

Armond, 1st Lt. S. C., to Aberdeen Proving Ground.

Dean, 1st Lt. W. H., to Camp Pike.

Wolfe, 1st Lt. H. W., to Ft. Sill.

Melchiersen, 1st Lt. W. G., will report to Depot Quartermaster at Chicago for duty as meat inspector.

Paul 1st Lt. A. F., Jr., to Camp Devens as meat inspector and camp veterinarian.

Black, 1st Lt. W. G., to Camp Johnston.

Stifler, 1st Lt. J. R., to Veterinary Hospital 10 at Camp Lee.

Cooper, 1st Lt. P. C., and Selby, 1st Lt. O. C., to Camp Devens and Camp Meade, respectively.

Following to Camp Greenleaf for inst., 1st Lts: Devine, L. P., Handley, G. A., Moore, J. A., Noona, J .A., Petry, C. O., Torgeson, H. A., and Gilman, 1st Lt. H.

The following second lieutenants at Camp Kearney promoted to be first lieutenants: Elmo P. Colburn, Ross K. Knighton, David S. Kay, Curtis L. Fry, Earl S. Martin, Harry L. Calhoun, Robert E. Adams, Sawyer A. Grover, Ray Gaskill, Henry C. Petersen and Clarence Carnahan.

Bateman, A. J. F. received commission as 1st Lieut.

Second Lieutenants

To Chicago as meat inspectors: 2nd Lts. C. J. Cook and Fred Gross.

To Jersey City, N. J., as meat inspector: 2nd Lt. F. E. Boyd.

To Camp Greenleaf, Ft. Oglethorpe, Ga.; V. M. Rasmussen; J. K. Spare; W. K. Denison; J. J. Kelly; W. A. Belding; E. D. Rhoads; A. A. Feist.

BOOK REVIEWS

Handbook of Medical Entomology

By Wm. A. Riley, Ph.D., and O. A. Johannsen, Ph.D. Professors of Insect Morphology and Parasitology, and Biology, respectively, Cornell University, New York. Pages 350; well illustrated. Published by the Comstock Publishing Co., Ithaca, New York. Price, $2.20.

This book is the outgrowth of a course of lectures on the general subject of the transmission of diseases of man by insects, given by the senior author at Cornell University, during the past six years. It is, however, in the nature of a revision and elaboration of his "Notes on the Relation of Insects to Disease," published in 1912.

As the development of the subject is progressing rapidly and the shifts in viewpoint correspondingly swift, the authors do not consider the text final or complete by any means, but as a summary of the important advances made in the work, they believe it will be welcomed by physicians, sanitarians, and working entomologists, and to teachers as a supplement to lecture work on the subject. It also aims to place those interested in touch with original sources of contributions on the matter.

It is interesting to note that while it is only within the past few years that particular attention has been directed to insects as the disseminators of disease, as early as 1530, Mercurialis, an Italian physician, during the period when the "black death," or plague, was ravaging Europe, wrote that there was little doubt that the disease was carried by flies feeding on the secreta of the diseased and depositing it on food in neighboring dwellings. This belief was not wholly lost sight of, and from time to time in the medical literature scattered references have been made to flies as carriers of disease, and so popular is the subject at the present time that every school child is familiar with the popular slogan: "Swat the fly."

The ways in which arthropods may affect the health of man are discussed under three general headings:

1. Directly poisonous, as scorpions,

(*Continued on page 422*)

Department of Live Stock Poisoning

By L. H. PAMMEL, Ph. D., Ames, Iowa
Professor of Botany, Iowa State College

Ergot in Rye

THERE is an unusual amount of ergot in Iowa rye this year, more than I have seen for some years. In a wheat field in Warren county the other day, I counted fifteen ergotized grains in a single head not more than four inches long. I made counts on fifteen heads as follows: 15, 12, 9, 6, 4, 6, 10, 11, 7, 9, 6, 12, 8, 7, 10. In every case where the rye occurred in the field nearly every head of the rye clump had some ergot. The ergot in the rye comes, of course, from the infection carried in the germinating ergot in the spring and the abundance in the rye and not in the wheat can be accounted for only by the fact that rye matures somewhat earlier and therefore blossoms earlier. The following very interesting letter has been written to me by Professer H. E. Jaques of the Iowa Wesleyan College, Mount Pleasant, Iowa:

I have been observing a heavy infestation of ergot on rye in various parts of the state. It has been most rcently noted in Washington, Jefferson, Davis, Lee, Henry, Keokuk and Madison counties. Where rye has been mixed in wheat the per cent of diseased rye heads seemed greater than where only rye was grown. Again, in pure rye fields the ergot appears to have claimed a larger per cent of heads around the outer edges of the fields. No rye fields have been seen that were wholly free from the disease.

In southern Lee county two fields of rye that had suffered from hot weather had been cut early for hay, leaving the fields for some other crop. Considerable ergot was observed in the hay then in the barn. A count of 500 heads in a strip missed by the mowing machine, revealed between 4 and 5 per cent diseased. Would you consider if safe to feed this hay? What is the maximum amount of ergot that may be safely fed?

Dr. Reed, of the University of Missouri has shown me some ergot on western wheat grass (*Agropyron Smithii.*). This is rather early for it to occur on this grass. With us it usually occurs very commonly on quack grass a little later in the season. The early infections appear on rye, and from this it generally spreads to wild rye, through the conidial stage, by flies. Terrell grass and the small wild rye (*Elymus striatus*), as well as quack grass, probably carry it over to the larger wild rye (*Elymus canadensis* and *E. robustus*). The question of ergot on the wild grasses and in wheat and rye is of considerable economic importance, inasmuch as screenings from rye will be much used as food. It is certainly a very unsafe proposition to use such screenings for cattle feed. Some of the older veterinarians will recall the severe outbreak of ergotism in Kansas in 1884. The ergot was found by Dr. Salmon on a variety of Terrell grass; in one case 10 per cent and in the other 12 per cent was found. From this, it was estimated that 5 to 6 per cent of the entire weight of the plant must have been ergot and that a twenty-pound ration of hay would contain 4 ounces of ergot, sufficient to cause ergotism. According to Winslow, enormous single doses are required to poison animals or man. When as much as two drams of ergot to the pound are given to dogs, death is not constant. Three ounces have killed small dogs.

Lambs Quarter

Mr. Jefferson Mathis, of Ankeny, Iowa, sends a specimen of lamb's quarter with the following letter:

I send you herewith a weed, a small patch of which grew in my calf pasture. I lost three calves which acted like they were poisoned, as they would wheel round and round and fall down and die within a few minutes. They did not bloat. I am living on a place,

new to me, and I never saw the weed before. I had just two or three little patches of it, but have had them dug up.

The common lamb's quarter is a widely distributed weed in the North. I do not think it is the cause of the trouble mentioned. The suddenness of the deaths indicate that they must be due to some plant or other substance which has more toxic properties than the lamb's quarter, which is not infrequently used for greens instead of spinach.

In the case mentioned by Mr. Mathis a veterinarian should have been called. It would be interesting indeed to learn whether this plant was responsible for the trouble.

Horse Nettle

Dr. W. J. Walsh of Walnut, Iowa, sends a specimen of horse nettle (*Solanum carolinense*), with the following letter:

I am sending you, under separate cover a weed, and I would be pleased to have you inform me as to its name, as well as to whether it is a poisonous plant. I have a client who has lost horses, seemingly from forage poison. I have not had the opportunity to autopsy any of them. So if you will inform me as to your findings as well as suggest treatment, it will be very much appreciated.

I do not think horse nettle is responsible for forage poisoning. The root, as well as the berries, have a very disagreeable narcotic odor. The plant contains the gluco alkaloid solanin. The solanin causes a certain amount of cerebral disturbance of a narcotic character. When the leaves of the plant get into small grain they cause threshers to experience considerable irritation, largely due to the hairs and spines of the plant.

Staggers in Sheep in Patagonia

The *Tropical Veterinary Bulletin*[1] reviews the work of F. S. Jones and J. F. Arnold[2] on staggers in sheep in Patagonia, which is of special interest because the injurious grass described is that known as the coarse tough Pampas grass (*Pia denudata*).

Now, as a matter of fact, all of the species of the genus Poa, to which our common blue grass, Texas blue grass, and other grasses variously known as meadow grasses, belong, are among the most desirable of all of our pasture grasses. The experiments were carefully conducted by the Department of Animal Pathology of the Rockefeller Institute for Medical Research and should therefore be given some weight.

This disease is described as a non-infectious, nervous disorder, affecting horses, cattle, and sheep. It causes weakness, muscular tension, irregular movements of the head, stiffness of the limbs and transient motor paralysis, accompanied by spastic spasms on excitement. There is also derangement of the limbs and conjunctivitis. This disease was previously described and detailed clinically by Acosta in 1914, who produced the disease by experimental feeding of the coarse tough Pampas grass, which grows in large quantities on the Pampas at altitudes of from 500 to 1,500 feet. To quote from the review, the author states that the disease could not be a so-called "deficiency" disease in as much as Theiler, Green, and Viljoen failed to set up symptoms of avitaminosis in horses, cattle, and sheep feeding on a diet of ten parts of polished rice and one part of autoclaved hay for long periods.

The time required to produce definite symptoms after feeding the grass varies. In two animals the disease developed after two feedings, and in another instance, a period of twenty-one days elapsed. The average time was ten days.

Many sheep recover from staggers spontaneously, and a complete change of diet will usually effect a cure within two weeks. Older animals which have pastured for long periods on lands where the grass grows become tolerant and are rarely affected with staggers. It is toxic to sheep at all seasons of the year. The young green grass is as toxic as the edible portion of the plant. This article certainly is of interest since it adds another grass plant of a poisonous nature to the relatively few now known to medical science. The sleepy grass of the West, *Stipa robusta*, the inebriating grass, *Stipa inebrians* of Siberia and the common millet *Setaria*

[1]Tropical Veterinary Bulletin, 1918, Vol. 6, p. 42.
[2]Jour. Exp. Med., 1918, Vol. 26, pp. 805-823.

Italica, under certain conditions are known to be injurious. It is a rather remarkable fact that out of some 3,500 species of grasses, so few should be deleterious, and it is of special interest that a species of Poa should be counted among the injurious grasses, since all the others, so far as known, are valuable pasture grasses.

ANTHRAX AND ITS CONTROL

(*Continued from Page* 382)

destroy the army of invading germs, which are the sole and only cause of the trouble.

In this connection, I feel sure that the veterinary profession itself could accomplish most valuable results. Years ago, when hygiene or preventive medicine first came into recognition, the medical profession of that day thought they were doomed, if disease was to be prevented by their patients adopting rational lines of living, etc. But do we find fewer members of the medical profession now than there were some twenty or thirty years ago? I think not! In fact, people now seem more willing to pay for advice along hygienic, than along therapeutic, lines. And physicians seem to reap just as large incomes as in the days when they prescribed "pills, plasters, and potions" on every occasion, but with little or no advice given as to how to keep well by preventing sickness.

The point I desire to make here is, that if, in addition to the regular work of vaccination against anthrax, the veterinarian would display sufficient interest in his client and his affairs to explain to him the microbic phase of the disease; the why and the wherefore of sanitation; and the immense importance to him of thoroughness in its application, he would not only gain his greater confidence, and would certainly not suffer financially, but would be a most potent factor in the control of this disease, and at the same time help raise the standing of the profession in the eyes of those with whom he is brought in contact in a professional way. In fact, I am of the opinion that we, as a profession, must not only be therapeutists, but educators, along hygienic lines, of the stockowning public as well, if we are to obtain the most gratifying results, and more particularly when dealing with the dangerous communicable diseases.

In an important campaign of this kind hearty co-operation is, of course, absolutely necessary; the state, the stockowner, and the veterinary profession should work in the most perfect harmony, each performing his part, in the interest of both the individual and the public good.

The success of such a combination of effort as I have indicated will depend largely, if not wholly, however, upon the education of those who are most vitally interested in it; and not the least of these are, I should say, the stockowners themselves.

I have mentioned the elimination of politics in control work of this character. In making this statement, I do not refer to politics as such, which simply means the science of civil government, but to a certain variety with which we are all more or less familiar. In other words, it is very questionable policy to employ, or appoint, an individual in such serious work as the control of anthrax infection, simply to pay off some political debt; or one whose only recommendation is that he may be able to control a few factional or party votes, but, otherwise, may be totally incompetent to perform the duties required of him. In such a case politics is a menace and liable to result in serious consequences both to the community and to the state.

Finally, if we, in anthrax-infected states, can only get our live stock machinery together, with all of the parts, or factors, which I have alluded to, working smoothly and harmoniously, I believe we may look for far more gratifying results in the future. On the other hand, if there is friction in some parts of the machine, with some parts defective, or a cog missing here and there, the future will not, I am afraid, hold out the encouragement that we all would like to feel, especially as our enemy, the bacterium anthracis, is one of the most tenacious of life of all the disease-producing micro-organisms.

POINTED OPINIONS by Readers ON LIVE TOPICS of Veterinary Medicine

It is in reports like those of this department that the current history of the progress of veterinary science is written. Are you leaving a record of your experience which will help others, as you have been aided by these and other clinical reports? If not, you are earnestly invited to contribute from your experience that this department may be of the greatest service to its readers. By so doing you will earn the lasting gratitude of those who are aided by your suggestions.

State Versus Federal Quarantine

A CASE in damages was recently decided by the Supreme Court of Michigan which is of interest to shippers of stock. The P. M. Railway Company accepted for shipment a carload of sheep and hogs to be taken from Fremont, Michigan, and delivered at Buffalo, New York. Evidence showed that such shipment and delivery might be made within the thirty-six hours permitted by federal law, and such shipments had been made within that time. The stock were fed and watered before loading, and were started from Fremont at 11 a. m., Saturday, October 31, 1914. The next that the shipper heard from them was during the forenoon of Monday, November 2, when he supposed that his stock were in the Buffalo market. He was informed that the stock had been unloaded at Plymouth, and that owing to quarantine regulations the stock could not be delivered at Buffalo. He ordered the shipment made, and notified the company that it would be held for the loss sustained. In response to another communication he ordered that the shipment be diverted to Detroit, and again notified the company that it would be held for damages. A third time he gave similar instructions, and the stock was so delivered and sold.

The refusal to comply with the first order was based upon a quarantine order of the state of New York on account of the presence of the foot-and-mouth disease which prohibited shipments into the state of New York from certain specified areas, in one of which Plymouth was situated. Fremont was not in such prohibited area.

The court held that such quarantine order was no defense for the railway corporation, because, where the Federal Government had through Congress taken possession of the field of interstate shipments as affected by quarantine regulations, the Federal law is paramount, and the state must yield if in conflict therewith. (See "Essentials of Veterinary Law," section 109, and for Federal foot-and-mouth regulations see section 139.) This shipment, even from Plymouth, was not contrary to the Federal regulations.

The court held further that the railway was not in position to claim protection of the state quarantine regulations even were they valid. It was in position to know facts bearing upon the case which the shipper was not in position to know. It had undertaken to deliver the stock in Buffalo from Fremont, which it could have done without violating the state regulations. It unloaded the stock in a place barred by the New York rules. The judgment of the lower court was therefore sustained, assessing damages upon the corporation. The measure of damages was the loss in weight consequent upon the delay, the loss of some sheep, and the difference in the market price at Detroit when they were sold, below the market price in Buffalo on the day when the stock should have been delivered according to expectation.

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OVARO-HYSTERECTOMY OF THE PUPPY

Having received several letters of inquiry relative to certain steps in the technic of the operation "Ovaro-Hysterectomy of the Puppy," described in the July issue of the JOURNAL, perhaps it will not be out of place for me to make a few further observations which may be considered as supplementary to the original article.

As has been stated already, the purpose of the article was a description of the mechanical procedures involved. It was written with the hope that after giving a brief outline of the different operative steps in their proper sequence, together with the accompanying cuts, it might prove to be fairly comprehensive.

The descriptions of the various stages should be gone over thoroughly, and the cuts carefully studied, before the operation is attempted. If approached before the details are thoroughly understood, and firmly fixed in the surgeon's mind, failure may result from any of the following causes: (1) Inserting the sound in the bladder instead of in the anterior end of the vagina. This accident is not likely to occur however, in a puppy. (2) Improper location of the laparotomy incision (Figs. 1 and 2). (3) Injury to the bladder, or intestines while making the laparotomy incision (Fig. 3). (4) Improper placing of the retractor, with insufficient dilation of the laparotomy incision (Fig. 4). (5) Puncture of the vaginal floor with the end of the sound, due to excessive pressure exerted by the instrument while pushing the tissues through the laparotomy incision (Fig. 4). (6) Difficulty in grasping with forceps the posterior part of the uterine wall, on account of its being enveloped either by omentum, or by the peritoneal fold surrounding the urachus (Fig. 4). (7) Rupture of the uterine horn while attempting to draw the ovary outside of the laparotomy incision. In my opinion, further comment is necessary only as regards two of the possibilities mentioned.

Injury to the urinary bladder, and the intestines will be considered first. It is advisable to empty the bladder by means of digital manipulations made through the abdominal wall, preliminary to the operation. Usually this can be accomplished with little difficulty after the animal is anesthetized and relaxed. By referring to Fig. 3, it will be noted that the point of the knife, with its cutting edge uppermost, enters the peritoneal cavity just far enough to produce such an opening in the peritoneum as will admit of the introduction of the point of a grooved director. The point of the director—its grooved side against the flat of the knife blade and handle, and in precisely the same plane—is pushed into the peritoneal cavity. The knife is then withdrawn. With the director in the opening, its point turned backward, the peritoneal incision is then sufficiently enlarged. If the bladder has been emptied, and the incision cautiously made as described, there is no danger of injuring that organ. If the diet has been restricted, as usually is the case preceding this operation, there is little danger of intestinal puncture.

The other condition to which I shall allude, is the one occasionally encountered in which it seems almost impossible to so manipulate the sound that neither omentum, nor the serous fold surrounding the urachus will be brought out through the incision along with, and covering, the posterior portion of the uterus. If, after repeated trials, this condition persists, it may become necessary to have an assistant hold the handle of the sound with the posterior uterine region pushed out through the incision, while the operator with small artery forceps clears away the offending tissues so that a firm hold of the uterine wall may be secured by the very tips of the jaws of the artery forceps. (Fig. 4.) As intimated in the article, puncture of the vaginal floor may be a result of too much manipulation during this stage of the procedure.

The operative steps were described in the original article, and in this communication particular attention has been drawn to possible accidents, and conditions, more or less likely to be encountered. These must be guarded against through the good judgment and individual ingenuity of the operator.

It is advisable to perform this opera-

tion first on the dead subject. To insure necessary relaxation of the tissues it must be done, of course, before *rigor mortis* is present. Each detail, beginning with the location of the laparotomy incision, and finishing with the placing of the suture, should be carried out with the same care and precision that would be exercised in operating upon the living subject.

Little reference to asepsis was made in the article. It was assumed that the surgeon attempting the operation, whose facilities and environment would not permit of aseptic surgery, certainly would adopt antiseptic precautions.

This is not a difficult operation, but is one in which the details must be followed very closely in order to insure a perfect result. If things go wrong, the operator is very likely to give up in disgust.

Inasmuch as an actual demonstration of the procedure would be preferable to any written description, no matter how graphic it might be, I should be pleased to demonstrate this operation to any interested practitioner.

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A BETTER COMMUNITY MOVEMENT*

The object of this conference was the betterment of the social and industrial conditions in all communities in the state, but more especially that of villages and agricultural districts. The object is a most laudable one and worthy of the support of every citizen. The prime object of the movement is to secure better housing conditions, better sanitary conditions, better food production, better conservation, and scientific methods of cooking food products. The movement also interests itself in the improvement of educational facilities in rural communities, facilities that will ultimately lead to the making of better men and women of the children of such communities. This is sought to be brought about by a system of mental, moral and manual training for both girls and boys. The girls are given instructions in household and domestic science, such as cooking, sewing, hygiene, etc. The boys are taught the value of scientific or up-to-date farming, such as the proper selection and care of seeds previous to planting; the proper methods of preparing soils for the same, so as to insure the best possible yields of crops, the value of live stock on the farm, the value or advantages to be gained by the raising of pure-bred animals or at least well-graded animals in place of common bred ones. They are also taught the value of organization or co-operation in farming, hence the formation of boys' and girls' country clubs are encouraged and assisted. Instruction is also given as to the most economical methods of conducting a farm, such as the selling of surplus live stock, grain, etc., together with a method of bookkeeping for the farm.

The first feature of the conference was a pageant given by the public school children of Urbana and Champaign, showing "Children of an 'Average Town.'" The first group showed the benefits that children derive from good wholesome food, cleanliness, fresh air, etc. The second group showed the ill-effects of poorly cooked food, including impure milk, and the damage done to food by mosquitoes, flies, etc. This tableau showed in a striking manner the difference in the physical and mental qualifications of children reared in exactly different environments. Children from clean, sanitary homes, children that have received an abundance of clean, nutritious food—food that has been properly preserved and properly cooked—give marked evidence of such care in their well-nourished bodies, bright intelligent faces and general appearance of well-being. In contrast to this group, it was shown that children from less favored districts, the evidence or effects of ill-housing, insanitary conditions, improper feeding in the way of innutritious and impure food, among which was included impure milk, was marked. It showed the value of combating ignorance in the battle for the preservation of human life and the ill-

* Report as delegate of the Illinois Veterinary Medical Association to the Better Community Movement Conference held under the auspices of the University of Illinois, Champaign, April 10-12, 1918.

effects that can be produced on the immature human body by diseased meat and milk and insanitary surroundings. The third and last group in the tableau showed the marked improvement in the latter class of children when taken from their unwholesome surroundings and placed in better environment. The rapid response was remarkable, and the improvement in their mental, moral, and physical condition was most encouraging.

An address by Miss Harriet Vittum, of the Northwestern University Settlement, entitled "Every Citizen's Duty to Know How and Where the People Live and Play," was one of the best on the subject that it has ever been my good fortune to hear. She described her life as a worker among the foreign-born peoples of the North side in Chicago in a most vivid and realistic manner. To hear this splendid woman talk of "her people" could not fail to make one realize that all mankind are of one kin.

It is at last becoming general knowledge throughout all parts of the land that food plays an exceedingly important part in the dissemination of disease among the human race. I have, as you all know, been as one crying in the wilderness for the veterinary inspection of all meats and milk sold to people in rural communities. I have never before seen anything before that so forcibly impressed me with the necessity for such food inspection as was presented by the children in these tableaus. When we stop to consider the great number of infants that perish miserably each year from bovine tubercular milk, and the thousands of other children that drag out a miserable existence for a few short years and finally succumb to the same dread scourge, is it any wonder that we at times pause and ask ourselves if we are really living in the twentieth century and if so, how much longer is commercialism going to stand between the infant and children population of this country in the rural districts and an adequate system of milk and meat inspection that would give them in a large measure health and happiness. Our national and state authorities are careful to see that food products intended for exportation are protected by proper inspection, but the people living in rural districts must to a large extent go unprotected.

People who live in rural communities are, as a rule, ultraconservative. They are too apt to be perfectly satisfied with their surroundings and indifferent as to the source of their food supplies. Living conditions that would not be tolerated for a moment in a city are accepted as a matter of course in the majority of rural communities; hence when sickness or death overtakes them, they are prone to attribute their affliction to a divine visitation rather than to their own ignorance or carelessness. It is in such communities that movements such as the better community movement can do splendid missionary work in spreading abroad the gospel of good food, good houses, fresh air, clean milk, meat, etc. No one is more intimately associated with country life than the veterinarian. As a scientific man he should not only interest himself in the health and improvement of live stock, but in the health and improvement of their owners as well. He should be an apostle of the Better Community Movement.

The second day of the conference was devoted to sectional work, such as good roads, better farming, rural church, home improvement, etc. I attended the better farming section. Addresses were given on the formation of boys' and girls' clubs. Some of these addresses were very interesting, and without doubt in the districts where such work is carried on much benefit is derived from it by the farmers and their families. The addresses were largely given by county agents, and, as usual, some of these men had their hammers out for the veterinarian. They must have been taken by surprise when they found that the veterinary profession was represented in the meeting, and that they were not permitted to get away with all the knocks they gave but received as good a lot of knocks as they gave. It is policy for our profession to be represented at such gatherings.

The attendance at the meetings was, as a rule, small. Why such an important conference, covering such a wide

range of live topics, does not create greater interest on the part of the public is hard to understand. The University of Illinois is the property of the people of Illinois. It has always seemed to me that the general public of the state takes very little, or at least only a perfunctory interest, in what is going on at the university outside of strictly student educational affairs. The people of Illinois should remember that this university is one of the greatest educational institutions in the world. No matter how obscure or abtruse the subject, the seeker after human knowledge will find it here, or at least be directed to where it may be most easily and cheaply obtained. The people should regard this institution as an almost complete encyclopedia of human knowledge. I have always thought, and still think, that the members of the veterinary profession in this state should be more closely identified with this magnificent institution of learning. Make your problems her problems, and I am certain that she will give you every assistance in her power.

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REPORT OF THE FOURTEENTH NATIONAL TUBERCULOSIS ASSOCIATION MEETING

At the fourteenth annual meeting of the National Association for the Study and Prevention of Tuberculosis at Boston, Mass., June 6-8, inclusive, about 500 delegates gathered from all points of the United States and Canada to take more or less active part in the meeting of this wonderful association, which has done so much for mankind and is attempting to do more for the relief of human suffering during these trying times.

The work was divided into sections: sociological, pathological and clinical. The sociological section naturally gave much attention to the war phase of the tuberculosis problem.

The meeting was opened with an address of welcome by the Hon. Andrew J. Peters, mayor of Boston. "Any meeting which has for its purpose the saving of life and strengthening of the body cannot help but draw gratitude at this time," were the words with which the mayor greeted the association. He expressed satisfaction at the steps the association is taking in making people alive to the fact that tuberculosis is a menace to the public and by the dissemination of knowledge as to how disease can be conquered. Appreciating that Democracy must have a common understanding to progress, he welcomed this association on its worthy mission.

President Chas. L. Minor, M. D., of Asheville, N. C., following the mayor, emphasized that education was the most important factor in fighting tuberculosis or any other communicable disease, literature, lectures, motion pictures, etc., being among the most potent agencies. Stamp sales have given splendid aid. In preventing tuberculosis the value of improvement of living conditions is beyond computation. He made particular mention of the value and success of the periodical, *The American Review of Tuberculosis*, so ably edited by Dr. Edwin R. Baldwin, of Saranac Lake, N. Y., and Dr. Allan K. Kraus, of Baltimore, Md., and their associate staff. He stressed the important part that this association has played as a clearing house on tuberculosis matters, such as classification and nomenclature, and predicted that the year now opening would bring us the greatest problems the world has ever known. Pleading for the aid of all to assist at once in securing a membership of 10,000 he said that there are already returning from the blood-soaked trenches of France young soldiers in whom the hardships of the trenches has lighted up and advanced slight or latent tuberculosis.

The plans of this association are: (1) To assist in improving our present methods of physical diagnosis so as to increase the accuracy of detecting tubercular individuals. (2) The proper care of tubercular patients from military ranks. (3) The decrease of tuberculosis in our civil population.

Illinois has instituted a Red Cross service for the care of returned tubercular soldiers and asks for its extension through this association. The speaker strongly commended the great work and

ability of Surgeon General Gorgas and hoped for the happy co-operation of military and civil authorities and believes that questions of such moment can only be solved and crystallized by co-ordination and co-operation of medical experts. He views with fear the taking into combatant service men who are at all affected with tuberculosis, and he believes that hurried examinations must ultimately bring inevitable disaster. In civil life at this time it behooves us to watch the soldiers' families, so as to avoid conditions conducive to the development of tuberculosis. In closing he made a stirring and eloquent appeal that we should all listen to the cry of the stricken and lead in a bloodless war so as to banish from our dear country sickness and disease.

The executive secretary, D. Chas. Hatfield, of New York, in his report stated: "More than 11,000 tubercular soldiers have been reported by military authorities to the National Tuberculosis Association and through that body have been put in touch with facilities for the adequate care and control of the disease. Through the office of the Surgeon General all men discharged from the army because of tuberculosis and those rejected by the examining boards are reported. Through the office of the National Association these men are put in touch with the facilities of their own community, including those of antituberculosis agencies, boards of health, and the Red Cross, and every effort is made to see to it that each man is properly provided with sanatorium or home care and that his family does not suffer want. This system will be extended to cover every discharged tubercular soldier so long as the war lasts.

Educational exhibits, literature, and lectures have been provided in all the military camps in this country and will also be sent over seas.

Through the Red Cross Seal sale last year more than $1,750,000 was raised for tuberculosis work in this country, and this coming year plans are being made for a campaign to raise $3,000,000 during the period from November 4 to December 14 through the sale of Red Cross seals. Nearly 700,000 children have been enrolled in the Modern Health Crusader movement and under the direction of competent leaders are being taught how to care for their own bodies and how to protect the health of their communities.

Announcement was made of the sectional conference to be held during September and October in Spokane, Wash.; Denver, Colo.; Birmingham, Ala.; Pittsburgh, Pa.; Columbus, Ohio; and Providence, R. I. These conferences will be in the nature of war councils discussing particularly how the tuberculosis agencies can be of the most service in the war.

Dr. Hatfield stated that the estimates previously made by the association that at least 2 per cent of the 10,000,000 men called in the first draft would be found on complete physical examination to have tuberculosis, have not been overstated. The problem of caring for these men and for those who have already been certified as tubercular is taxing the facilities of the anti-tuberculosis organizations to the utmost.

"How America is Helping France with Its Tuberculosis Problems" was discussed by Dr. James Alexander Miller of New York, of the commission for the prevention of tuberculosis supported by the Rockefeller Foundation. In reciting some of the experiences of the commission, Dr. Miller told about the work it is doing in showing the French people how America is fighting to control the white plague. The commission, headed by Dr. Livingston Farrand, president of the University of Colorado, is working in close co-operation with the French government and the American Red Cross. The efforts of the commission are being received with the greatest enthusiasm by the French people. Among the methods employed are special demonstrations by dispensaries, nurses, sanatoria and hospitals in Paris and in one of the rural departments. It is planned to have a squadron of twelve automobile outfits equipped with motion pictures and a full supply of educational literature, exhibits, etc. Four of these are already in action. The lectures, exhibits and other public meetings held in

various parts of France are attended by thousands of people. The whole country is awakening to the fact that tuberculosis is a serious menace and that the American efforts to arouse community responsibility in the control of this disease may well be copied in France.

Contrary to the general belief the danger in military service of spreading or increasing tuberculosis does not compare with the danger offered in civil life by excessive alcoholism and venereal diseases. The present war has played no important part in increasing tuberculosis and it still remains a disease of the poor civilian industrial population. The speaker stated that there was no evidence to substantiate the rumors that prisoners are inoculated with tuberculosis in German prison camps. He caustically remarked that the Germans are in no need of such refined torture.

It is highly probable that tension and mental strain probably hasten death in many cases both in military and civil life, also lack of nutritious food favors its advancement. Up to two years ago the public health departments paid very little attention to tuberculosis, doing practically nothing except disinfecting. A great prejudice has existed in France against public acknowledgement of the presence of tuberculosis in families; these conditions have naturally changed since the beginning of the war. Birthrate and infant welfare are of great importance at this time, and visiting nurses and laboratories are now being provided. Housing patients in the tenement districts is a serious problem at present, due to the crowding in of refugees, and to the fact that practially no building has been done since the beginning of the war. France in the past has had no opportunity to train and use nurses as has England and the United States owing to the fact that nursing has been carried on by the nuns, however, since the separation of the Church and State nurses have become more numerous. Great praise is due to the nuns for the saintlike service they are rendering since again being allowed to return to their work.

In France almost all middle-aged physicians are doing military duty, leaving only the older men at home.

The commission has escaped professional antagonism, which is of tremendous advantage at this time and will also be after the war. In closing Dr. Miller stated that our help will be necessary only during the terrible stress that France is now under, and when the war is over she will arise strong and glorious and will be one of the leaders of the world in public-health problems.

The next paper was by Col. Geo. E. Bushnell of the Surgeon General's office, U. S. A., his subject being, "How the United States is Meeting the Tuberculosis War Problem." Reviewing the situation he spoke of the great difficulty at the beginning of the war in securing sufficient capable examiners. He stated that the examinations for military service necessarily differ some from those in civil practice in three ways particularly: First, some are very anxious to serve and conceal certain information. Second, some give false history and are not anxious to serve. Third, there is great necessity of avoiding error, so far as possible, by a single examination as to whether a man should be accepted or rejected.

He particularly made mention of the danger of confusing tuberculosis with other pulmonary ailments and that streptococcic bronchial pneumonia has caused great confusion as it cannot be positively differentiated without sputum examination.

Speaking of the small percentage of tuberculosis found on examining applicants for military service, he said that it might appear to some that the examination would not warrant the time and expense, but that there is also a pecuniary side to the question in times like these; if even only 5,000 were rejected it would save the government $5,000,000. He believes it possible that many infected men may have been passed owing to the exigencies made necessary by our lack of preparedness. He stated that buildings are being erected for the care of tuberculous soldiers and that about 6,000 beds will be ready by fall. There will be great need of capable

physicians for these institutions and all physicians who can be spared in civil life are urged to offer their services.

It is now ruled by the Surgeon General to hold all those disabled in service until they have received satisfactory treatment. The reconstruction of the soldier will need the assistance and patience of the soldier himself, his family and friends, so that progress will not be impeded by obstinate worrying; even short visits at home often work serious harm, particularly to the consumptive.

"How Canada is Meeting the Tuberculosis War Problem" was the title of the paper by Capt. Jabez H. Elliott, consulting physician of Military District No. 2, Toronto, Canada. In the Canadian army many cases suspected at first of being tuberculosis prove on further diagnosis not to be. Thus far the incidence of tuberculosis in the Canadian army is less than that in the male civilian population of military age.

To provide for the treatment of tuberculosis cases additions have been made to already existing sanatoria and in some cases hotels or other buildings have been reconstructed for sanatorium purposes. Since May 1, 1917, 803 new beds have been provided and 293 placed under construction, while 1,268 new beds have been authorized during the year. At present the Invalided Soldiers' Commission has 1,505 beds available for the treatment of tuberculosis; there are one or more sanatoria in each province. A generous scale of pay is allowed both while in the hospital and during treatment period after discharge, while the man who may have to change his vocation receives pay while undergoing re-education.

A private pension of $600 per annum is allowed for total disability. Non-commissioned and commissioned officers receive a larger allowance according to rank. Vocational work has proved of immense help, both as a therapeutic measure and as a means of fitting the patient for his life work after his discharge.

Canadian cases found in France are sent to England and from there to Canada at such time as is advisable. On reaching Canada they are placed in an invalided soldiers' sanatorium. Canada has now been under arms three years and nine months and it was the speaker's opinion from experience that America would need 2,500 to 5,000 beds per million to take care of her army tuberculosis.

"Isolate the Incorrigible Consumptive to Protect Children" was the subject discussed by Dr. John J. Lloyd, of Rochester, N. Y., superintendent of the Monroe County Tuberculosis Sanatorium, at Rochester, N. Y. He said the infection of young children by the incorrigible advanced case is retarding the limitation of tuberculosis to a very appreciable degree. The whole campaign of prevention must be directed toward lessening the number of children infected, and this can be done only by isolating and confining the incorrigible consumptive.

A most interesting address was given by Dr. Allan K. Kraus, director of the Dows Tuberculosis Foundation of the Johns Hopkins Hospital, Baltimore, Md., his subject being "The Word Tuberculosis." He stated that practically everyone has tubercules or the germs of tuberculosis in the body, but not everyone has tuberculosis. Scientific investigation shows that infection from tuberculosis is practically universal and that very few people pass the age of 15 without having some of the germs of this disease in their system. So long as these germs lie dormant in the system and do not produce any particular symptoms of disease we may indicate their presence by the term "tubercle." Just as soon, however, as the common symptoms, such as loss of weight or appetite, fever, cough, etc., begin to appear this indicates that the latent tubercle has become tuberculosis. The latter term should be applied only where the disease is recognizable. He said that it was just as ridiculous to be talking about tuberculosis simply because we have a tubercle in the body which is not at all active as it would be to call an ordinary mole a cancer. While it is true that either may develop into a very malignant condition, still in the tubercle or mole stage they are not such; therefore there should be a positive distinction be-

tween tuberculosis infection and tuberculosis, the disease. The speaker holds that tuberculosis bacilli to take hold and start disease must start submucously and not be blood borne.

Dr. Vincent Bowditch, president of the Massachusetts Anti-Tuberculosis League of Boston emphasized the advantages of fresh air, choosing for the title of his paper "Methuselah and Life in the Open." He said that Methuselah was the first real fresh air crank. The reason why Methuselah lived so long was because he knew enough to get all the fresh air that he could and to live out of doors day and night. Hippocrates, the famous early Greek physician, recommended fresh air as a cure for many diseases, and a number of ancient and medieval writers in medicine followed his suggestion. In spite of this advice, however, the great majority of people both when they are sick and well have shut the fresh air out instead of letting it in. Benjamin Franklin in an article written in 1776 extolled the virtue of fresh air and emphasized how easy it was to prolong one's life by living in the open.

Recently a number of people have endeavored to refute the value of open-air schools and fresh-air classes for children and to advocate that larger systems of ventilation are much more satisfactory. Dr. Bowditch cites concrete instances to prove the contrary. Fresh air secured through the open window or life out of doors is beneficial to the school child not only to his body but to his mind. Contrasted with the expensive systems of ventilation installed in many public buildings the simple devices used in the open-air schools and sanatoria for the treatment of tuberculosis are not only much cheaper but vastly more efficient.

Discussing "Rest and Exercise," Dr. Hugh N. Kinghorn, of Saranac Lake, N. Y., contended that work and muscular exercise of any kind, even deep breathing, were harmful for active cases of tuberculosis and that rest in bed in cases of tuberculosis where there is a temperature of over 99 degrees is the most desirable method of treatment. In his practice he never allows muscular exercise for any of his patients. Walking is the only form of exercise that he prescribes. As long as there are germs of tuberculosis in the sputum he is opposed entirely to any form of deep-breathing exercise for fear that the small particles of sputum may be drawn into other parts of the lungs, thereby causing prolonged illness. He feels that better results can be attained by emphasizing rest rather than by stressing the necessity for exercise in the treatment of tuberculosis.

"The Problems in the Vocational Reeducation of Disabled Men" was the title of the paper of Dr. C. A. Prosser, secretary of the Federal Board of Vocational Education, Washington, D. C. Figures compiled from the averages of all belligerents show that for every 1,000,000 men mobilized 10,000, or 1 per cent, of them each year would be proper subjects for vocational retraining. In two years this would be 20,000; three years 30,000 and so on. On the basis of any army of 5,000,000 we would have 50,000 men per year who would need assistance and help in the restoration and increase of their earning capacity, under the various classes of disability incurred. Of the 10,000 men out of 1,000,000, 50 per cent will require medical rather than surgical aid, men who have developed tuberculosis, heart trouble, kidney trouble, and functional disorders. The other half of the 10,000 will need some sort of surgical attention. Of the 5,000 surgical cases there will, as the average shows us, be 10 per cent of dismemberment cases where there has been a leg or an arm lost, and of these 500 men 300 will have lost legs and 200 will have lost one or both arms. The figures show an astonishingly small percentage of blindness. Out of the 41,000 men returned to Canada there were only 27 blinded men.

A study of these and other figures carries the conviction that this problem is by no means wholly that of the cripple or the maimed. It is the problem of the man who has a complication of troubles, or injuries, that while surgical do not amount to dismemberment, such for instance as a man with the muscle of an arm shot away, causing him

to lose the use of the arm. With such a diversity of injuries being largely individual so to speak, the work of re-educating these men becomes one that cannot be dealt with along broad general lines, but each man will require individual treatment, individual study of his case, individual training and individual efforts on his behalf in placement after he has been re-equipped to take up the broken threads of civilian life.

"Reconstruction and Rehabilitation Work for the Tuberculous in the Army" was the title of the paper read by Lieut. Col. Harry E. Mock of the Surgeon General's office of the War Department, Washington, D. C. He said that it was just as necessary that the soldier disabled by tuberculosis should be restored to complete physical usefulness as one who has had his leg shot off. The rehabilitation of these men includes their mental and physical training until they can be re-established as useful members of society. In reclaiming those in military service who have contracted tuberculosis and in securing their complete rehabilitation a policy similar to that which had been worked out before the war in reclaiming men found to be unfit by medical examination in industry is being employed. Instead of allowing these patients to lie around sanatoria doing nothing except reading and playing cards and becoming generally hospitalized it is planned to start their rehabilitation during this period when their physical reconstruction is taking place. Patients in bed or in wheel chairs will be taught certain useful trades and occupations. When discharged, if it is necessary, these men will be placed in special vocational schools where they will either be taught a new trade or made more proficient in their old one. The Surgeon General plans to keep close supervision over every tuberculous soldier until he is fully reclaimed.

Every soldier discharged from the army because of tuberculosis will be entitled to the following lines of treatment in an effort to reclaim him as a useful citizen:

1. The best medical treatment with certain adjuncts to secure the most rapid recovery.

2. Certain occupations in connection with this treatment to prevent hospitalization and to refit him for employment.

3. Suitable employment after the disease is arrested or apparently cured, combined with proper medical, social and economic supervision.

Dr. Sherman C. Kinsley, general secretary of the Welfare Federation of Cleveland, Ohio, chose as the caption for his paper "Child Welfare and Adult Efficiency." He emphasized the necessity of caring for the child by stating that the world looks on today with new interest as governments call men before them to pass on their ability to serve and divide these men according as they are fit or unfit. The classification of causes of rejection show that tuberculosis, lack of stature, venereal disease, defective eyes, hearing, teeth, speech—a long list of disabilities—are responsible for failure to qualify. One of the lessons suggested by this profound spectacle is that totally to overlook infancy and childhood and then to look to adult life for 100 per cent efficiency is like expecting to harvest in the autumn without planting in the spring and cultivating in the summer.

Dr. H. J. Corper, of Chicago, read a paper on "Attempts to Reduce the Resistance of the Guinea Pig to Tuberculosis by Various Agents." Experiments were carried on to find a new way if possible to hurry, so to speak, a diagnosis by guinea pig inoculation. After reviewing the work done by others along these lines by the X-ray, his efforts were directed to finding, if possible, a more constantly available and cheaper method. Among the things tried were inhalation of benzine, thorium X, ether, chloroform, and tuberculin, but without success.

"Experiments on the Effect of Repeated Protein Injections in Tuberculosis Infection" was Dr. M. S. Will's subject. The experiments conducted by him tend to show that active tuberculosis organisms are positively necessary for skin reaction, also that active lesions are necessary for thermic tuberculosis

reaction, but no one has definitely determined why this is so.

Dr. Edwin R. Baldwin of Saranac Lake, N. Y., discussing the problem of working with experimental animals, believes that to get the most accurate results in tuberculosis studies the experimental animals should be killed between 40 and 70 days. He agrees with others that it takes a great many animals and the most careful conducting of every detail entering into the whole condition to get information that is of much value. He uses the word "arrested" tuberculosis in guinea pigs rather than "cured," as the guinea pigs are evidently incapable of complete recovery. Spontaneous recovery of the guinea pig is a rare thing. Dr. Baldwin is using a strain of organisms isolated by Dr. Trudeau some 29 years ago. This strain has been producing a mild infection all these years but is still actively infectious.

The last paper on the program was by Dr. Burton R. Rogers, of Manhattan, Kas., impressing upon the association the importance of tagging the tubercular hog. A full account of Dr. Rogers' methods of so detecting infected cattle appeared on page 61 of the February number of this Journal, and it is quite probable all veterinarians have read it, if not they will find that it contains many sound arguments.

J. F. De Vine. Goshen, N. Y.

REPRISAL ON FARM AGENT

I have met quite a few veterinarians and some farm agents and my conclusion is that the average veterinarian is more competent to render farm agent services than the average agent is to render veterinary services. In the discharge of his duties the rural veterinarian has ample opportunity to observe the growing crops and estimate the average, the improvement in breeding stock and farming methods, and the condition and needs of roads.

By keeping a daily record he knows what diseases menace live stock in the various seasons, and to what extent, and surely is better equipped to advise as to their prevention and control than the farm agent. Hence if the farm agent "butts in" on the veterinarian's field, why not retaliate?

I am sending under separate cover a booklet which is in the nature of a reprisal on the farm agent who "knocks" the veterinarian. The expense of getting this out was willingly borne by merchants, breeders and others who gladly took advertising space.

Repeated efforts to agitate the farmers up to the point of hiring a farm agent here have failed and the good accomplished is nil, while on the other hand, a co-operative campaign conducted by government and state veterinarians covering a period of ten months, has eradicated hog cholera from Bullitt county and converted an annual decrease of 233 head of hogs for six years to an increase of 1,566 in one year. At present, as a spare-time sport, we are collecting pictures of bumper crops, better studs, jacks, bulls, rams and poultry, silos and farm tractors, and helping to organize a good roads club; all without the aid or consent of any ol' farm agent.

David Smith,
Shepherdsville, Ky.

RESTRAINT OF THE COW

The cow is much easier to restrain than the mare. In fact, it is usually only necessary to place her in a stanchion or stall she is in the habit of occupying. If the case proves to be difficult it will be found advantageous to elevate the hind quarters by means of block and tackle. There should be at hand a single-tree, two pieces of rope, six feet long, and a set of ropes and pulleys. Double the short pieces of rope and tie the ends together. The animal is then cast and the loops passed around the legs above the hocks and engaged in the hooks of the single-tree. The hook of the pulley is then placed in the ring of the single-tree, and the hind quarters lifted just off the ground. It will be found that the straining will usually cease, and the abdominal contents fall forward, making the manipulations of the fetus much simpler. Traction should not be applied in this position, but as soon as the position of the

fetus is corrected the pulleys should be lowered and traction applied.

H. E. KINGMAN.

Fort Collins, Col.

THE VETERINARIAN'S OPPORTUNITIES FOR SERVICE.

There can be no doubt that the commencement or graduation of a student is an important event in his life. His lectures, study, and investigations have been mainly theoretical and supervised by instructors. At commencement he leaves his college and all its helps and takes up duties and problems to be worked out, aided only by his own judgment and past training.

Your chosen profession is a most honorable one, and one which is making rapid strides in the realm of learning. It is no longer designated as "hoss doctor," or "mere veterinarian," but is being recognized in the councils of the scientific men and affairs of the country. Medicine, sanitation, research, and science are fighting the battles and giving relief and comfort to the world today, and never before, as now, have we realized how interwoven and complex are the interests of the human and the brute creation. We know now that as one class is benefited, the other enjoys a direct result. We have learned that many diseases of live stock are transmissible to the human family, either completely or in some modified form. We also know how dependent the human family is upon animals for its supply of food and clothes. The need is so serious and evident at this period that it gives a great incentive to the best scientific care of the live stock interests of the country. We have called your attention to these facts to further impress upon you the usefulness and dignity of your calling. Much will be expected of you in these days of rapid advancement and changing conditions. Alertness and great energy must constantly be exerted.

With all due respect to your training here, which I regard very highly, let me say to you very candidly that your education has only a good beginning. So much remains for you to discover, so many things are being perfected, that only keen observation and reading of the best scientific literature can keep you abreast of the times. Some great opportunity may be lost or gained according as you avail yourselves of the reading of high-class matter and mingling with learned men of the profession.

Hold up the standard of your chosen work and do not be content to sit at the second table. There is always room at the top, although the lower places are usually crowded. This upward climb cannot be accomplished all at once. Do not be too impetuous and spasmodic in this matter. A steady, constructive, unflinching desire to reach the heights, and a modest conservative manner at all times has never failed to put a good man where he belonged. Talking *too little* has rarely hindered a person's work or success; but *thinking* too little, *studying* too little and *doing* too little has often put a person on the junk pile of humanity.

Not only will you demonstrate your own merits and personality, but this institution will be effected by your work and conduct. Men of high ideals are maintaining this college and instructors have given years of work to your training. You must not disappoint these men, nor bring discredit to these halls of learning. No man can live unto himself alone, and we are our brother's keeper. All your professional acts will reflect either credit or discredit upon the Grand Rapids Veterinary College. Ignorance of veterinary technique, carelessness where responsibilities have been entrusted, dishonest methods, and disregard of professional ethics, are all beneath your scheme of life.

I come to you today, not as one of your profession, but as a layman, representing the Live Stock Sanitary Commission of the state. I regret that it is not possible for me to talk to you from a scientific standpoint and bring you messages from the realm of learning that would assist in your career. My message is entirely from a practical standpoint, and gained from the expensive school

*Portion of address by Hon. H. H. Halladay, at commencement of Grand Rapids Veterinary College, April 24, 1918.

of experience. As farmers and live stock breeders and dealers, the experience of our commission has been long and varied; and added to this has been the work of our commission, which exists solely as an aid to the live stock interests of the country. This work brings us into contact with the veterinary profession, and it has been a most pleasant relationship and has proved how valuable the veterinarians are to the live stock interests and agriculture as well.

As an adviser to the farmer and stock raiser, you can be invaluable. All good ideas and new methods should be explained so that the farmer may give the best care to his stock. Methods relating to light, sanitation, ventilation, and conveniences should be explained. Breeding and all kindred topics should be discussed. A clean, honest-minded veterinarian will not encourage bad conditions among stock in order to get practice when such stock becomes sick. The more a farmer understands up-to-date methods and practices them, the more use he is going to find for a veterinarian, and so it reacts favorably for the profession. These are days of prevention instead of cure. Let us save and keep to the highest point of health and productiveness every animal within our borders.

The control of contagious diseases is of grave importance. Food, or the Hoover war-winning movement, is of so much concern that no inroads of disease must be left unchecked. The veterinarians must bring to us their greatest skill, and in addition we must have a thorough campaign of education. The farmer must be told and told repeatedly the whys and wherefores in these matters. He must also be supervised in any control work. Here the veterinary has a great opportunity for practical patriotism. Much patience and diplomacy is always needed in such work. You are dealing with people who are suffering personal loss and yet must be brought to consider the rights of the community at large. A few well-chosen remarks will often open the eyes and understanding of people who are looking at their own personal loss, and cause them to change their course into that more favorable to community benefit.

The matter of bovine tuberculosis presents a big field to your profession; and in this disease, as perhaps in no other, there is an opportunity for honest, clean-cut practice. Here is a chance for a veterinarian to show his integrity. A dishonest test, which I am ashamed to admit is sometimes given, is an everlasting shame to your profession, and one which may easily cause inestimable harm. A pro-German with a bomb in his hand to destroy property, can do no more unpatriotic an act than can a veterinary with his testing outfit bent upon a dishonest test.

You will have unlimited opportunity to further the war measures of this country, which so much need our support just now. Everything that promotes food production puts a smile on Uncle Sam's face. We need more wool. The great and sudden call for army cloth and yarns to clothe our boys properly, together with the steady decrease of the sheep industry for wool-growing purposes has brought about a grave condition. The breeding and saving of sheep for wool must be encouraged and assisted in every possible way, and here is an opportunity for your profession to give your best aid.

Cattle, hogs, and even poultry-raising need stimulus and scientific care. Farming and stock raising must both be brought to the highest point of efficiency, as one hinges onto or makes possible the other. The doing of matters which may seem trivial means great results. When each cog in the wheel of progress is perfect and in order the great machinery turns out desired results.

These thoughts have been presented to show how rich the world is in opportunities, both to ennoble your own lives and to give of yourselves and your abilities to help your fellow men and the country as well. We hope you see how unlimited is the field for practical patriotism—just the spot in which you happen to be placed. You are just as patriotic in serving in these various ways as though you were wearing the uniform. The spectacle may not be so

grand and the work so thrilling, but it is necessary and appreciated.

However, it is quite possible that some of you have become thrilled with the call for army service and are expecting to cast your fortunes with those who are fighting this war for democracy and humanity. Many of your profession are doing credit to themselves and all they represent by offering their service at this most critical time. Those who are thus able to give themselves where men are so badly needed are deserving the greatest praise. Words fail to do them proper honor. . . .

This war is bringing many valuable lessons home to us. It is making for more sympathy, unselfishness, and consideration for others. We are brought to see that giving and serving is a privilege —not a burden. We are going to love those brave Belgians, French, Canadians, Italians, and British as never brothers loved before.

HON. H. H. HALLADAY,
President Live Stock Sanitary Commission.
Lansing, Mich.

PHYLACOGEN FOR HOG CHOLERA

I read with great interest the experiences of different veterinarians who are generous enough to send in their "takes" and "mistakes" to be published for the benefit of and the ridicule of all who may read and smile, so will contribute some of my experiences in the hog industry.

In March I put five shoats, weighing about 40 pounds each, on cholera-infested pasture, and gave each shoat 30 cc. anti-hog-cholera serum. Four days later one shoat died, and four were in bad shape, or what I prognosed as hopeless. I had nothing with me except a quantity of phylacogen with which I had been treating a case of fistula. Thinking my hogs were gone anyway, I gave them each 10 c.c. phylacogen on the hyper internal surface of the ham. Next morning when I went out, I found all hogs eating and apparently well. These hogs are doing well at this writing.

On May 19 I was called to a farm where there were thirty-seven registered sows suffering from cholera. Five died before I began treatment. With the owner's consent I gave 10 c.c. mixed infection phylacogen hypodermically. One hog died in about thirty minutes and the remainder of the herd made a complete recovery.

Have I made a new discovery for our greatest worriment, hog cholera?

I would like to hear from some of the state cholera control men on this subject. I am still experimenting and will be glad to answer any and all questions on the subject.

E. R. VAN DEGRIFT,
Commissioner of Health.
Anderson, S. Car.

INTERESTING DOUBLE MONSTROSITY

An interesting obstetric case is reported as follows: Dr. G. A. Waddle, of Marysville, Cal., was called to take charge of a labor case occurring in a Holstein cow, for which the owner had recently paid $1,000. Examination disclosed a double monstrosity, which was successfully delivered by amputation of the anterior limbs, one of each fetus, and partial severing of the connecting septum. By applying traction on the head and front limbs of the larger fetus it was delivered by anterior presentation, and by continued traction and si-

Double monstrosity successfully delivered by amputation. Drs. G. A. Waddle, J. R. Kreger and R. S. Christman, who conducted the autopsy.

multaneous repulsion on the head of the other it was delivered by posterior presentation. Dr. J. R. Krueger and myself were called in and our combined autopsy findings were as follows: The two fetuses were united from the anterior point of the sternum as far back as the umbilical, at which point there was a bifurcation of the umbilical, one for each fetus. There was but one heart, which was located in the normal position in the larger fetus, the other fetus receiving its blood supply through the septum connecting the two. The larger fetus was normal in every respect, the smaller one having all organs except the heart; the kidneys, spleen, and liver, however, being very small, in fact, rudimentary. The upper jaw was about four inches shorter than normal, as may be seen in the picture. There was no tail, the rectum above coming out on the back, and the vulva, resembling an incision rather than a generative organ, was located about where the tail would normally be.

R. S. CHRISTMAN.

Yuba City, Cal.

MEDICINES DISPENSED BY VETERINARIES NOT TAXABLE

The writer has just read the comment on page 338 of the July JOURNAL regarding the tax on veterinary medicine. We thoroughly understand that your object in discussing this matter is to protect members of the profession from any unpleasant consequences from their non-compliance with the law. We are, however, unable to understand why the law is being applied to veterinarians in the Chicago district when we have been unable to hear of a similar ruling in any other internal revenue district, affecting either veterinarians or dispensing physicians. Certainly if this is the intent of the law and if the Commissioner of Internal Revenue has so interpreted it, the same ruling should apply to all districts and to veterinarians, physicians, dentists and druggists alike.

There are two considerations, under which we have been advised by competent counsel, that the law does not apply to the ordinary dispensing business of either veterinarian or physician. The first of these is the wording of the law itself, which is, "that there shall be levied upon all pills, * * * * and all medicinal preparations, compounds, or compositions whatsoever, the manufacturer or producer of which claims to have any private formula, secret, or occult art for making or preparing the same, or has or claims to have any exclusive right or title to the making or preparing the same, or which are prepared, uttered, vended, or exposed for sale under any letters patent, or trade-mark, or which, if prepared by any formula, published or unpublished, are held out or recommended to the public by the makers, venders, or proprietors thereof as proprietary medicines or medicinal proprietary articles or preparations, or as remedies or specifics for any disease, diseases, or affection whatever affecting the human or animal body, *and which are sold by the manufacturer, producer or importer,* a tax equivalent to two per centum of the price for which so sold."

We refer, particularly, to the phrase "and which are sold by the manufacturer, producer, or importer." A reading of other portions of the Act reveals the same phaseology, as for instance; upon musical instruments, (naming them) "sold by the manufacturer, producer or importer": "upon any article commonly or commercially known as jewelry, sold by the manufacturer, producer or importer thereof": "upon all perfumes, essences, toilet water, cosmetics * * * upon all of the above which are used or applied or intended to be used or applied for toilet purposes and which are sold by the manufacturer, producer or importer."

In each of these and all other items mentioned by Section 600 of the Act, the same phraseology is used and further, section 601 provides "that each *manufacturer, producer* or *importer* of any of the articles enumerated in section 600 shall make monthly returns * * * * and pay the taxes, etc.

Our counsel advises that this law does not apply to the retail druggist who sells the perfumes and other toilet articles at retail, nor does it apply to the retail dealer, who sells musical instruments, nor to the retail jeweler, who sells jew-

elry, unless they are the bona-fide manufacturers, producers or importers of the articles taxed. Our counsel is further of the opinion that physicians, veterinarians, dentists and druggists are exempted from the provisions of the law for the same reason and in the same way that the other dealers are exempted and for the further reason that the Act says, with reference to preparations such as veterinarians handle, "or which, if prepared by any formula, published or unpublished, are held out or recommended to the public." Our counsel holds that this phraseology refers to such preparations as are advertised or offered as patent medicines are advertised and offered; that the veterinarian in supplying to his clients fever mixtures, colic remedies, etc., is not holding them out or offering them to the public and that the clientele of the veterinarian is not "the public" as contemplated in the law.

For all the above reasons we feel quite sure that the Chicago Revenue Collector is in error in collecting any tax whatever from veterinarians under this Act for such preparations as they handle or dispense in ordinary practice.

We regret the publicity this matter has received because it places an obstacle in the way of the veterinarian, dispensing or handling his own drugs; because it affords retail drug associations additional ammunition for their propaganda against dispensing by physicians and veterinarians; because it may result in legislation specifically including drugs dispensed by physicians and veterinarians in the list of taxable articles. We trust this phase of the question will be given your serious consideration.

We believe it would be a service to the profession if some Chicago veterinarian could quietly test the ruling as it has been applied in your district.

F. V. HAWKINS.

Indianapolis, Ind.

There is but one law for all, namely, the law which governs all law, the law of our Creator, the law of humanity, justice, equity—the law of Nature and of Nations.—Burke.

FRACTURES IN DOGS

Fractures are termed simple when there is no external wound; compound, when the broken ends of the bone protrude through the skin; comminuted, when the bone is shattered into fragments; and complicated, when serious damage has been done to neighboring tissues, organs, vessels, or nerves. Greenstick fracture is the term applied to the bending and only partial fractures seen in young animals whose bones are more or less plastic. The symptoms of a fracture are pain, inability to support weight, and crepitus.

Reduction besides being more humane, renders the necessary manipulations simple and more effectual in reducing a fracture under the influence of a general anesthetic. An additional advantage of anesthetization, especially where H-M-C is used, is that the casts used to retain the fracture have time to harden before the patient comes out of the anesthetic. Reduction is effected, and the ends of bone brought into apposition, by grasping the limb firmly with one hand, above the fracture, and bringing the lower portion into position with the other hand. The limb should then be bandaged, starting at and including the foot. The bandage is to prevent chafing and swelling from unequally divided pressure. A plaster of Paris bandage should now be rolled on the whole length of the limb, about three thicknesses being applied. The limb should be held straight until the cast dries, or a splint of cardboard, basswood, or poroplastic felt applied and bandaged on, and left there until the cast is hard.

With a compound fracture, the wound must first be thoroughly cleaned and disinfected, the fracture reduced, and a cast applied as in simple fracture, but a window must be left for access to and dressing of the wound. This window may be formed by placing a pill-box lid over the wound when bandaging and applying the cast, afterwards removing it by cutting out the parts above with scissors. The wound must be dressed every day and a dressing applied.—C. G. Saunders, in "Canine Medicine and Surgery."

Queries and Answers

Liability for Damage Done by Rabid Dog

I AM a practitioner of veterinary medicine. I rent a barn for my hospital and I have my sign over the front door, "Hospital for Horses and Dogs." The owner reserves a few stalls in the west side for a horse and a cow.

A brother-in-law of the owner bought a cow and put it in the west side of the barn without my permission. He kept the cow there about a year. I said nothing to him about it and he said nothing to me, and never offered to pay me any rent for the stall he occupied. This brother-in-law knew that I used this barn for a hospital and that I brought and received animals there to treat and observe.

I had a dog here for observation for rabies a year ago. He developed rabies and I killed him.

This last winter I had another dog here for rabies. I kept him in a cage made of No. 4 wire screen across the front of a single stall, and had him chained to a hole in the manger of the stall with a good dog chain fastened to the dog's harness. I nailed a cleat across the corner of the door at one end, and there were spikes driven in the top and bottom of the other end, and two buttons in the middle of the door. The dog developed symptoms of rabies about two hours after he was brought in. He was quite a valuable dog and I did not care to kill him at that time. He finally developed a violent form of rabies, broke the chain and gnawed a hole through the corner of the front screen and got loose in the barn. He bit the owner's cow in various places, and also bit the brother-in-law's cow through the muzzle and face and in several other places. I shot the dog through a window. The head was sent to Columbus for examination and my diagnosis of rabies confirmed. The cows were killed and disposed of.

Can either of these men hold me responsible for the loss of their cows? The brother-in-law is suing me for negligence on my part in taking care of the dog. The owner of the barn has not started any suit against me.—A. G., Ohio.

REPLY BY DR. HEMENWAY: The problem presented involves questions of law and of fact. The questions of law are answered in my "Essentials of Veterinary Law," to which the following citations refer, though not in the exact form here presented. The man receiving a dog for care and treatment thereby becomes a "bailee" (S 220). He is required to use the same care and diligence as though the dog were his own (S 225). As regards others he stands in the position of owner. If his dog, through viciousness or disease does injury or causes the spread of disease to the animals of others, the owner will be held liable in damages in so far as the owner has been guilty of negligence (S 211). The amount of damages may be reduced, or recovery of damages may be prevented if it be shown that the owner of the other animals has been guilty of contributory negligence (S 55,212). It is the duty of the owner, or bailee, of a dangerous animal to keep such animal so securely restrained that it will work no harm (S 212). As a question of law, therefore, the owner or bailee (in this case the veterinarian) would be liable to the owners of other animals for such damage as might appear, which in this case would be the value of the cows thus made fatally ill, unless it be shown that such owner or bailee or veterinarian had used due and reasonable care in the restraint of the dangerous dog.

The question of fact is whether the veterinarian had used reasonable care in restraint of a rabid dog. This is a question for the jury to decide. There is another question of fact for the jury to decide. If the owners of the cattle injured knew of the presence of the rabid dog, and if they knew further that the dog was not fastened with a sufficiently strong chain, nor sufficiently restrained by the wire netting, it might be held that they were guilty of contributory negligence in that they left their cattle where they would be injured. It must, however, be remembered that a veterinarian would be supposed to know more about the possibilities of a rabid animal getting loose than one not familiar with the characteristics of rabid animals. The fact that the dog did break loose was an indication that the veterinarian underestimated the possibilities.

In the problem presented the veterinarian owed no special duties toward the property of the owner of the barn or the other renter. It would have been different if he had contracted with them to care for their cows; or if the animals thus injured were left with him for treatment. Then he would have been the bailee of them also, and he would be also under obligation to take due care of them (S 221, 223-227) and return them in the best condition possible. In this case, as a matter of law, he would be obliged to show both that he had taken due care to restrain the rabid dog, and that he had taken due care to prevent injury to the cows. He could not plead contributory negligence, unless he based his plea upon the fact that the owners of the cows knew that he was careless. He would probably have even greater difficulty to convince the jury that he had used the due care in this case that he would in the problem presented.

NO ANTIDOTE FOR COCKLE-BUR POISONING

What is the antidote for poisoning in cattle from eating cockle-burs? There is some complaint by farmers in this country because their cattle eat cockle-burs, so they think. What are the symptoms of such trouble? I have looked through my Journals for such troubles but failed to find it anywhere.—J. W. S., Okla.

REPLY. So far as I know, and I think my information is correct on the matter, cockle-burs are not poisonous to animals except when in the germinating state. When the young plants are only an inch or two high, and when the cotyledons are still present, they are poisonous to hogs and perhaps also to cattle.

Hogs frequently eat the weeds in this stage, but I think it is rare for cattle to eat them.

Eating cockle-burs at this stage frequently causes death in hogs, following a train of nervous symptoms, delirium, and spasms. No successful treatment has been reported.

TROUBLE LIKELY DUE TO EDEMA IN LARYNX

I have a case under my care which to me seems somewhat unusual. The animal in question, a fine mare, five or six years old, was associated with other horses that had influenza a couple of months or so ago, but she showed none of the symptoms—no swelling nor soreness of the throat—and she never missed a feed. After the other horses recovered, the mare began to breathe hard and continued to grow worse until she was in a very serious condition. The owner of the horse lives about twenty miles from me, so a local veterinarian was called before I was called. Upon my arrival I immediately inserted a tube which gave complete relief.

I put the patient on a potassium iodid treatment and she seemed to be doing fine as long as the tube was in place, but she got the tube out and the owner replaced it a time or two but failed to get it back in the proper position. When I called again she was breathing hard. The opening had been closed for twenty-four or forty-eight hours before she "went bad." It was necessary to insert the tube in a new place, whereupon she became easy again. She again got the tube out, and I had her brought to my barn and after another tube was inserted she improved, but the irritation caused

by inserting the tube so many times produced some swelling. She has never missed a feed or carried any temperature. I am of the opinion that it will be necessary to perform the "roaring operation" upon this mare before she will be permanently cured.—H. C. R., Ill.

REPLY:—From your description of the case I am inclined to doubt if the roaring operation is needed. The fact that the animal went nearly forty-eight hours after the tube was removed before experiencing difficulty in breathing seems to indicate that the trouble might be due to edema in the larynx, which is caused in part by the act of respiration.

Don't you think it would be well to give her a course of arsenic, preferably sodium cacodylate, and wait for a time before performing the roaring operation?

Notwithstanding all that has been said of the roaring operation it is by no means a brilliant success. I very much doubt if more than 50 per cent of cases are permanently improved.

PERCENTAGE OF BUTTER FAT IN MILK

I have under my care some Holstein herds of the best blood strains procurable. The quantity of milk is all that could be desired, but the percentage of butter fat is too low. Their rations are about the same as other herds in this locality, which are getting some very surprising percentages in butter fat from inferior cows.

I can not say positively that the owners are doping these cows, but I am satisfied that such is the case. I have noticed their cows on a seven-day test have a temperature of 103° F., with slightly labored breathing and a slight twitching of the eyelids.

What medicinal agent can they be using and what symptoms should I look for to denote the use of dope?—C. N. S., Ontario.

REPLY:—The butter fat content of milk produced by any given cow is controlled by three factors, inheritance, the stage of lactation, and the feed. I do not believe that any drugs not profoundly affecting the general health would influence the percentage of butter fat in the milk.

Some strains of Holsteins are notorious for the low percentage of butter fat in their milk, running in this respect below grade cattle. If the milk gives no evidence of having been watered or skimmed, I should regard it as normal for these particular animals. The temperature you mention, 103° F., is not out of the way for heavy milkers during the summer time.

INDICATIONS PLAINLY INDICATE POISONING

I was recently called to see two sick cows, which the owner said he had brought in from pasture two days previous, apparently suffering from diarrhea. Three had been attacked in the same manner, and the following day went down and were unable to rise. That evening one of them died. The next morning I was called, but unfortunately the dead animal had been buried before my arrival, hence no postmortem was held.

The symptoms of case No. 2 were as follows: Very nervous and easily excited, apparently suffering from abdominal pains, limbs warm, diarrhea present and very fetid, temperature 102°, pulse 65, unable to rise, slight salivation.

The other patient showed much the same symptoms, but was able to stand for a few moments.

Castor oil with ginger had been administered, apparently without results.

Pointed questioning of the owner revealed nothing to indicate anything other than that they had been poisoned in some way in the pasture. I left, leaving instructions to follow up with oil if required and to call me up in the morning.

In the morning the owner called up to say that No. 2 had died the previous evening and that No. 3 had just died. On postmortem, I found all organs sound with the exception of the rumen which was as black as coal throughout.

Having been told that brown-tailed moths had been prevalent in this and

adjoining pastures, I made a thorough search for the caterpillars, but found none, nor any signs of poisonous weeds.

As it has been left to me to investigate and determine the cause of this trouble I would be glad if you could throw some light on the subject.—C. B. S., Nova Scotia.

REPLY:—The cases you describe are certainly indicative of poisoning. One would, at first, think as you did, of plant poisoning, but your failure to find a plant that could be suspected of causing this trouble would cause one to look elsewhere. Conditions not varying much from this have been noted in cattle grazing on lands in close proximity to smelters—smelter-fume poisoning.

I had a personal experience with a number of cases that resembled the ones you describe in many respects. The pasture on which these cattle were grazing was searched again and again for some plant that might have caused the trouble. Finally some cattle in the pasture were observed eating paint that had scaled off of a large signboard that stood in the pasture, advertising Bull Durham tobacco.

The same condition has also been noted in cows that were able to reach through the fence and lick paint from newly-painted buildings, or to eat it from discarded paint pails. Brine if drunk by animals in sufficient quantities might also cause a similar condition, as might also slops containing washing powder.

The circumstances and surroundings, I am sure, indicate poisoning, whether plant, forage, or mineral, is open to question.

In this connection it might be noted that poison containers, such as Paris-green boxes and white lead or arsenate of lead cans, thrown into trash piles and dumps usually hold enough of the material to make fatal doses when eaten by farm animals. Paint buckets even though thinly coated are licked by cattle because of the sweetish taste of the lead compounds; and even one bucket licked by five cattle has been known to cause fatal results. When such buckets are wanted for farm use they can be easily cleaned with turpentine, but uncleaned buckets or kegs left about or thrown into trash piles are dangerous.

Materials of this sort most dangerous to live stock are: Paris green, London purple, arsenate of lead, calcium arsenate, and any compound of arsenic, nicotines, and zinc compounds.

FEE FOR VACCINATING HOGS

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the fundamental laws on which it is based, without which the treatment is only a hit or miss effort, must employ his training and knowledge of veterinary science to at least as great a degree as in any other branch of his practice. This fact should be impressed upon his client in his discussions of the treatment and by example, in his application of it. If he is careful to do this his charge for his services on a time basis can be such as to make his remuneration adequate.

Conservation of the veterinarian's time would undoubtedly result from an understanding on the part of his clients that they were paying for his services on the time basis. When the client realizes that by properly preparing his herd and premises and by having a sufficient amount of help at hand to make the work move as rapidly as possible a saving to him will result, he will willingly supply these necessities.

If, through adopting a better system of fees for the immunization of swine, veterinarians can eliminate the misunderstandings that have arisen, and prevent repetition of such accusations as have heretofore worked injury to the profession, they will have gone far. The result will be less lay competition, better protection for the country's crop of pork, a more prosperous live-stock industry, added usefulness and a greater reward for the veterinarian.

PEACE ONLY WITH HONOR

We love peace, as we abhor pusilanimity; but not peace at any price. There is a peace more destructive of the manhood of the living man than war is destructive of his material body. Chains are worse than bayonets.—*Douglas Jerrold.*

MORE LIGHT ON TREMBLES

On page 285 in the June Journal I note an article on "Trembles," but it appears that there was no attempt made to isolate any organism which might be present.

In 1915 I had a case in a cow showing all the symptoms of the disease. Autopsy showed only a fatty degeneration of the liver with a slight ecchymosis of the myocardium and the spleen. Cultures made from a macerated portion of the liver on agar slants were small and transparent, later becoming opaque, but nothing characteristic was observed. As I had no other media available no further cultural experiments were attempted. Smears made showed a medium large rod-shaped organism, gram negative and without tendency toward granular staining. A hanging drop showed that it was motile. Inoculation into a runty calf gave negative results.

As I was quite busy at the time I was forced to drop the case and have not seen anything like it since. However, I believe that the organism which I isolated was the bacillus lactimorbus, but whether or not it was the cause of the disease I cannot say for the reason that attempts at inoculation proved unsuccessful. If any of the readers have ever seen anything like it, it would be very interesting to hear of it, as this disease is certainly of grave importance due to its fatality to man, as was shown in the Illinois case, although its occurrence may be relatively rare.

I remember of an occurrence up in Wisconsin when I was a boy, of an illness attacking a couple of gypsy children. The history, so far as I can remember, showed nothing out of the usual diet had been taken except that they had been fed on milk stolen from a cow in a pasture a day previous. I can distinctly remember that the gypsies in their superstition thought that it was a punishment inflicted upon them for stealing the milk. It is quite possible that this was a case of trembles, undiagnosed by the attending physician called by us to attend the children.

J. T. JORGENSON.

Clermont, Ia.

WHY RESERVE ALL THE SENTIMENT FOR THE HORSE?

I have read with much interest the articles in your Journal pro and con the use of horse flesh as a food. I am more and more impressed that this important subject should be taken up more thoroughly than it has yet been, as a war conservation measure.

I observe that those criticising the use of horse flesh as a food base their arguments on prejudice and sentiment. Why should we spare the wild horse of the West any more than we would an innocent pet calf? If this sentiment and prejudice were engaged against the killing of our calves, especially female calves, it would help meat-production materially.

The critics have failed to criticize the quality of equine meat, so undoubtedly they admit it is equal to the bovine. Let them show us wherein the quality is not as good as the bovine, and demonstrate its lack of nourishment. If they can show that it is harmful to the health of the consumer we will be pleased to learn of it.

Should we, have we, the right to deny this wholesome meat to the thousands who need it for their existence and for the preservation of their health and strength, and who would be only too glad to eat it had they the opportunity? I am sure the consumer would be much benefited and also the country in which he lives.

Those who do not care to eat the meat because of sentiment or prejudice have the privilege to leave it for those who do, and they will not be harmed in the least.

For the benefit of those who offer so much criticism to the eating of equine flesh, it is my impression that they would do their country (if it be America) more good if they would direct that sentiment against the eating of our baby stock, especially the female. Our country needs more live stock so that it is easy to see how sentiment in that direction will benefit those who suffer from lack of meat.

HERMAN T. LUDWIG.

Oklahoma City, Okla.

Handbook of Medical Entomology

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certain spiders and mites, predaceous bugs, and stinging insects.

2. Parasitic; (1) true parasites; (2) accidental, or facultative.

3. Transmitters and disseminators of disease: (1) simple carriers; (2) direct inoculators; (3) essential hosts of disease germs.

It is as essential hosts of disease germs that arthropods play their most important role, and this, the author considers the most important group; for once the arthropod becomes an essential host for a given parasite it may disseminate infection in three ways: (1) by infecting man or animals who may ingest it; (2) by infecting man or animals on whose skin or mucous membrane the insect host may be crushed or may deposit its excrement; (3) by direct inoculation by its bite.

The book will be found of exceeding interest to both layman and practitioner, and the extensive bibliography appended provides abundant references to the literature for those who may care to carry their researches further. The book is elaborately illustrated throughout, both as regards the insects and the lesions produced by them.

Wounds of Animals and Their Treatment

By R. Harrison Smythe, M. R. C. V. S. Civil Veterinary Surgeon, Attached A. V. C. Pages 194 octavo. Published by Alexander Eger, Chicago. Price, $2.00.

In offering this work to the veterinary profession, the author states that he does not pretend to present anything startlingly new or to propound any fresh and original theories, but simply to describe a number of the various types of wounds met in practice, and the treatment which has been found of most benefit.

It is noted that while Carrel's method has recently found much favor in the treatment of war wounds, its utility in veterinary cases is limited. Emphasis is given, however, to the fact that continuous irrigation with normal saline or weak antiseptics is of the greatest aid to drainage.

Upon first examination the treatment of the subject seems somewhat elemental, but upon further perusal it is evident that every phase of the treatment of wounds common to animals has been given thorough study and investigation, and the results presented in a concise form adapted to the busy man, making it a practical guide to the practitioner in solving his every-day problems. The subject of "fistula" seems to be especially well handled, the various types and the treatment thereof being well brought out in illustrations. A chapter on "War Wounds" and another on the "Use of Vaccines in Wound Treatment" are of particular interest.

Cows, Cow-Houses and Milk

By G. Mayall, M. R. C. V. S. Second Edition, Revised and Enlarged. 1918. London: Bailliere, Tindall & Cox, 8 Henrietta Street, Covent Garden, London.

The popularity of this book is evidenced by the fact that a third edition has been required to supply the demand. Four new chapters have been added to the previous work, two have been rewritten, and many additions and revisions to the text have been found necessary to bring the matter up to date. The author is of the opinion that there is great room for marked increase in the consumption and production of milk, and it is the purpose of the book to stimulate such production and afford substantial help to those desiring to enter this field of activity.

Cultivation of Medicinal Plants

A drug grower in the *Lancet*[1] notes that such drugs as aconite, dandelion, and quack grass can be had in sufficient quantities without cultivation. Large quantities of belladonna are under cultivation in England. The author notes that hyoscyamus commands good prices, but the crop is very uncertain, because of the attacks by insects, which in some seasons completely destroy the plant. Growers of the male fern (*Aspidium Filix-mas*) in England have found the difficulty that the English root does not produce extract containing the proper proportion of *filicin*, the British Pharmacopeia requiring not less than 20. Possibly the English root does not contain as much of this principle as the continental root.